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VOL. 84. No. 14. 620 SOUTH MICHIGAN AVENUE, CHICAGO, SEPTEMBER 30, 1922. \$2.00 Per Year.



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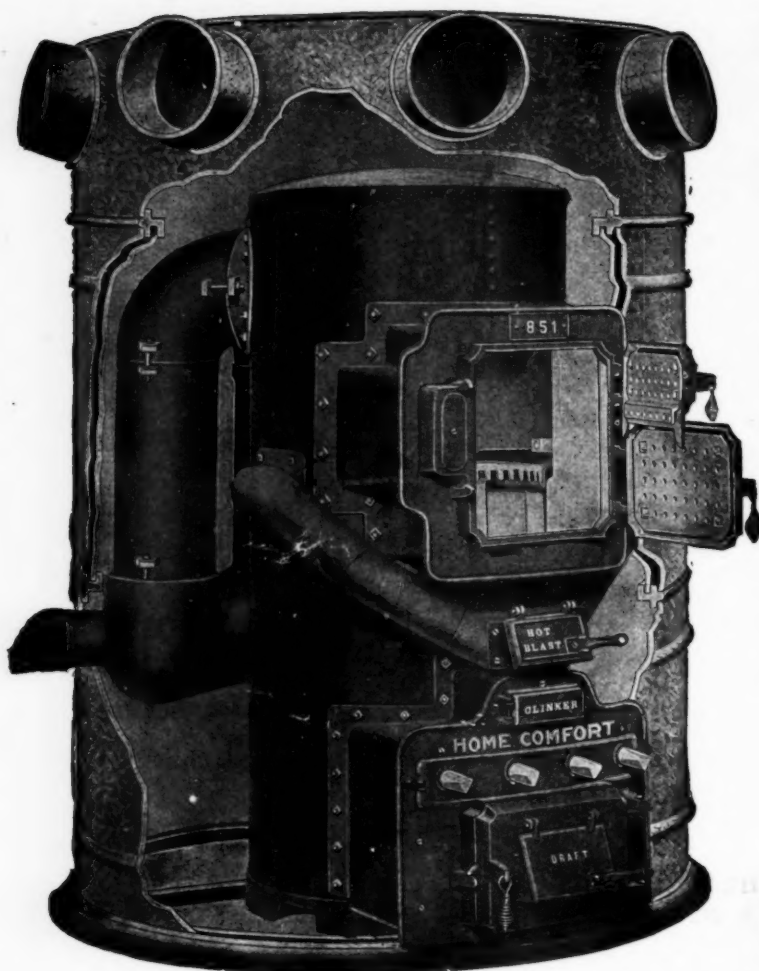
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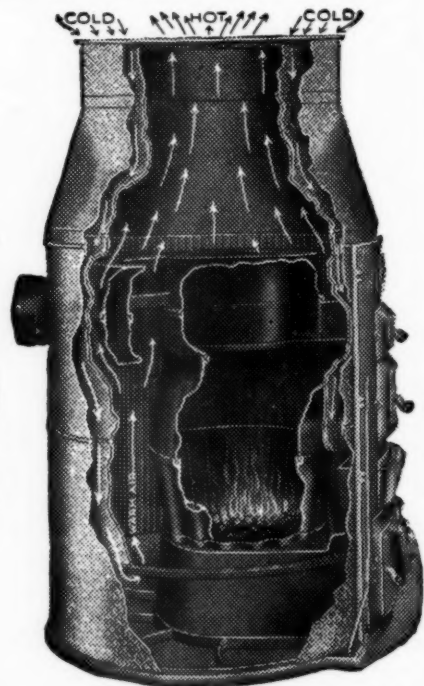
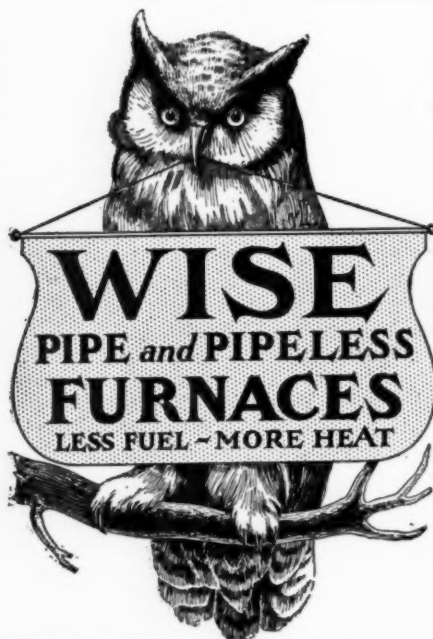
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- -

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the Hardware, Stove,
Sheet Metal, and
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Ventilating Interests

AMERICAN ARTISAN and Hardware Record

Address all communications
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VOL. 84. No. 14.

CHICAGO, SEPTEMBER 30, 1922.

\$2.00 Per Year.

GET YOUR SHARE OF A BILLION AND A QUARTER

According to the Farm Journal, one of the prominent agricultural publications, the total value of farm crops and livestock produced in 1922 will reach the tremendous sum of \$13,650,000,000—more than thirteen and a half billion dollars.

The same publication also states that this is an increase of more than one billion and a quarter over the value of the same products in 1921, and that this increase is all profit, because this year's crop and cattle cost less to produce.

That is a lot of money.

Especially when you consider that it is all extra money—money that did not exist in 1921 and therefore could not be spent.

What is the farmer going to do with it?

Many of them will pay off debts incurred in the two lean years of 1920 and 1921, and some of this will find its way into the tills of the hardware merchants—either in payment of accounts or through the channels of the banker, the miller, the lumber dealer, the clothing merchant and others.

A good deal of the balance will come directly to the hardware merchant to pay for a new kitchen range, a washing machine, field fencing, tools, implements, etc.

The farmer will have at least ten per cent more money to spend this fall and winter than was the case in 1921, and through some channel a large portion of this money will reach the hardware merchant who is on the job.

What do we mean by being on the job?

Simply this—

That he must go out and solicit business from the farmer.

That he must advertise.

That he must show the farmer that he—the hardware merchant—is ready and anxious to serve the wants and necessities of the farmer, and that the prices which he asks for his goods are no more than fair.

That he is a real hardware merchant, and not just keeping a hardware store.

Sitting in his store and waiting for the farmer to come in to spend his money is not merchandising.

Anybody can do that. It takes a real merchant to "bring" business "into" the store.

This year it will not be nearly as difficult to induce people to come to the store and buy, as it was last year.

Money is more plentiful. Labor is well paid and employed to a much larger extent than in 1921.

* * *

The coal shortage, which is almost certain for the states in the Northwest, now that the strike on the Great Lakes steamers is on, is bound to have serious consequences for those who must use coal as fuel for their stoves and furnaces.

But there is a bright spot in the situation for the stove and hardware merchant who has, or can secure, a supply of oil heaters, oil cook stoves and special oil burning devices, to be used in ranges, stoves and furnaces.

Random Notes and Sketches.

By Sidney Arnold

I had a letter from George Valentine, of the Independent Stove Company, the other day and he enclosed the following story to pass on to my other friends:

The deputy sheriff was trying to break the bad news gently.

"Are you the Widow Jones, ma'am," he asked the woman who came to the door.

"Widow Jones?" she retorted with asperity. "Not so you could notice it. My old man is sittin' back there in 'he kitchen this minute."

"Sorry to have disturbed you, then, ma'am," replied the deputy politely. "Guess the boys down to Hoopenholler must have gone and lynched the wrong feller."

"That simply goes to show," says George, "that it is always good policy to be sure that you are right before you go ahead. That poor woman will live in suspense until those Hoopenholler folks catch her old man."

* * *

"It is good policy to keep quiet at times and especially so if the psychological moment for speaking out has passed," said J. M. Triggs, of the Majestic the other day at the Midland Club, and he illustrated his remarks with the following story:

The host was nervous and inexperienced and he rose hurriedly at the conclusion of a song with which one of the guests had been obliging.

"Ladies and gentlemen," he began. "Before Mrs. Smith started to sing she—ah—told me her—ah—voice was not in the best condition and—ah—asked me to apologize for it, but I neglected to do and—ah—I apologize now."

* * *

"The other night I was visiting at the home of a friend," said E. S. Gellatly, of the Illinois Zinc Company.

"This friend of mine has a youngster by name of Julian, who is a rather literal-minded little chap as was evidenced when he met with a slight accident. He had fallen from a ladder and when his mother ran to pick him up, she cried:

"Oh, my dear, how did you fall?"

Whereupon Julian, who is a second grade pupil, replied:

"Vertically."

* * *

Gus Ruhling, the man with the hammer—the V. & B. hammer—spends his vacation in Michigan, where they raise peaches and apples among other things, and he has some wonderful tales to tell about the sizes of the fruit that is grown over across Lake Michigan.

Here is one of them:

An Ohio agriculturist bought a farm in the northern part of Michigan where people raise the Northern Spy apple and are not backward about boasting of its size and taste. Hearing that a neighbor who lived a couple of miles north had raised a large crop, he sent his son over to get a hundred pounds.

All the son got was this reply:

"Boy, you go back and tell your father I wouldn't cut an apple in half for any man living."

* * *

The well known financier, S. W. Straus, spoke at the annual convention of the Military Order of the World War, an organization composed of men who served as commissioned officers during the recent war. His subject was that of world-wide stabilization and his remarks are well worth careful reading as they picture the attitude of the men who to my mind have the situation sized up right:

"I believe there are certain important steps that should be taken by the United States in helping solve the present great problems of the world, but I wish to emphasize that the suggestions I have to offer

are entirely those of the financier," said the speaker. "The man who acquires great wealth becomes either a menace or a benefit to society, according to his mental attitude, and America today occupies the position of the rich man among nations.

"It is my opinion that we can most adequately fulfill our duties to mankind by rendering financial assistance to other nations along certain intelligent, businesslike lines. I do not advocate the donation of money, because nothing would be gained by such policies. You cannot help a man by making a beggar of him, and no nation would be benefited by making it an object of charity.

"I am firmly of the opinion that the United States should stand ready to make loans to other nations which would be benefited by such assistance, provided the loans were amply safeguarded as to principal and interest and the proceeds were used exclusively for constructive purposes.

"This money should not be loaned until the foreign nations cut down their armies and navies."

* * *

Smile.

If the weather looks like rain,

Smile.

When you feel you must complain,

Smile.

Do not mind if things seem gray;
Soon there'll come a brighter day;
You will find that it will pay

To smile.

If the world looks sad and drear,

Smile.

Banish every thought of fear,

Smile.

Do the very best you can;
Play your part now like a man;
Make each day a better plan

And smile.

If you taste life's bitter cup,

Smile.

Should the doctors give you up,

Smile.

You are very far from dead;
Waste no time in useless dread;
Put your trust in God instead
And smile.

—Grenville Kleiser.

The Latest News About Stoves and Ranges

Items and Discussions of Interest to the Manufacturer and Retailer of Kitchen Ranges, Heating Stoves and Accessories.

American Gas Ranges Have Good Opportunity in Wales.

Dealers in South Wales are inclined to favor American stoves, and there seems to be a good market for low-priced efficient American gas ranges and cookers. In the Swansea district about 80 per cent of the houses are piped for gas, and 90 per cent of the consumers use gas for cooking purposes. The local gas company installs most of the cookers at the present time; and, in order to compete with the British manufacturer, the American manufacturer would have to sell his goods at a price low enough to offset the cost of installation and

service, which is furnished free by the local gas company. It would also be necessary to establish a central service station in some English city in order to supply spare parts on short notice.

Interested American manufacturers are invited to forward catalogues and price lists to Vice Consul Paul F. Darcy, Swansea, Wales, England. Pamphlets describing and illustrating the ranges now being sold in South Wales will be loaned to interested firms upon application to the Specialties Division, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C., referring to file Number 67304.

a great many people who merely started in with us having stoves repaired come back to buy a bill of building hardware for their new home.

"House furnishings are the main thing increased, however. The people who buy small household articles are the people who have stoves repaired, and I find that our stove repair department causes a great number of people to get in the habit of calling on us for their needs for the homes."

John Prowell has made it his business to know every part of every stove that has been sold in Birmingham and is being sold. He not only knows this part, but he knows all the other stoves it will fit. He knows the numbers used by the various manufacturers, not the exact number of each part, but the series of numbers.

If a customer comes in and wants a certain stove part for a stove Mr. Prowell often has to find out the make of the stove and the size by devious paths, as a great many of them do not know what kind of stove they are using, nor exactly what kind of part they want. After he finally finds out the kind of stove and the part desired, it might cause some wonder that he goes to a bin, or has someone else go, and gets a part that is marked for an entirely different stove, with an entirely different number, but he knows that this part will fit.

From his knowledge of stoves many things have come. One of these is a little foundry out on the edge of Birmingham where he makes parts for stoves that are obsolete and for any other reason are not stocked. He also makes parts for all the standard stoves and keeps this little foundry in operation practically all the time on this class of business.

Another result of his efforts is

Stove Repair Customers Frequently Become Good Customers for Other Lines in Store.

Birmingham Stove and Hardware Merchant Tells How His Business on Housewares Has Been Increased.

JOHN PROWELL, Vice-President of the Robert Prowell Stove and Hardware Company, Birmingham, Alabama, is a firm believer in the idea that to make a success of selling any line you must know that line from beginning to end.

And he demonstrates his faith in this idea by proving that he *does* know all there is to know about stoves and their parts, so far as one man can assimilate such knowledge.

"Years ago," says Mr. Prowell, "when I first started in the business with my brother, I decided that one thing well learned was better than a smattering of many things. Through an accident I had to take care of stoves and the stove department, and as a result I decided to know all about them. I learned a great deal about new stoves and my attention was constantly called to the number of people who want-

ed parts for their stoves. I decided to learn about parts. At first I thought that would be a comparatively easy job, but the further I went into the matter the more parts I found. Today we have in our store 3,400 bins with stove parts of a different kind for each bin. In addition to that I have about 2,000 bins of parts at our small foundry where we make them.

"I have learned the parts of all the stoves we carry and of all that our competitors carry and of all that have been sold in Birmingham in the past. I know the various parts that will fit other stoves and what stoves they will fit. In case of a particularly obsolete stove part, I advise that the customer had best get another stove, but I can make it at the foundry if the customer insists.

"From stove parts to building hardware, shelf hardware and so on, is a long step, but we find that

that all the people of Birmingham, or rather a very large proportion of them, and a good many who do not live in Birmingham have come to know that John Prowell knows stoves and that in case they need something done to their he will see that it is done right at a minimum cost.

This does not stop with stoves. Being sure of good service in this one line the people believe in the Robert Prowell Stove and Hardware Company and they go there for others. New customers are made through the quick handling of trouble and satisfaction given by the stove department every day. A large number of people have to have stoves repaired, and almost anyone who has lived in Birmingham a long time will tell you to go to Prowell's for the work.

H. T. Burrows Is Secretary of Malleable Iron Range Company.

H. T. Burrows, Appleton, Wisconsin, has been elected secretary of the Malleable Iron Range Company, Beaver Dam, Wisconsin, to fill the vacancy caused by the recent death of A. S. Bowron. Mr. Burrows for some time has been associated with the Fox River Valley Paper Company, Appleton.

Chicago Hardware Merchant Used Franklin Story for Display.

The article on Benjamin Franklin's invention of the portable stove which was published on pages 26 and 27 of our September second issue has been commented favorably upon by many of our subscribers, and some of them have made use of it in connection with their window displays.

One of these is Carl F. Gauger, hardware merchant at 4526 North Lincoln Avenue, Chicago, who posted the two pages on one of his windows.

Mr. Gauger tells us that many people stopped to read the article and that several come into his store and commented on the information contained therein. They had always thought of Benjamin Frank-

lin as a patriot and the patron saint of the American printer, but none of them knew him as a maker of heating stoves.

Wants Starlight Heating Stove, Made 20 Years Ago, for Collection.

We are in receipt of the following letter from E. V. Coulston, Secretary of the Rock Island Stove Company:

TO AMERICAN ARTISAN:

Dear Sir:

A friend who has a leaning for antique styles would like to get a No. 22 or 25 Starlight heater, which he states was made by a Detroit concern some twenty years ago. It is described as a wood heater.



Starlight Heater.

It makes no difference whether the stove is used or unused, if it is in a fairly usable state, or can be renovated into such condition.

It occurs to me that this might have a news interest for the readers of your paper, that would possibly uncover the article.

Rock Island, Illinois, September 25, 1922.

E. V. COULSTON.

Editor's Note.—The heater mentioned in Mr. Coulston's letter is shown in the accompanying illustration and was made by the Detroit Stove Company, Detroit, Michigan.

If any of our readers should know of such a stove, please send us the information.

What Increases or Decreases Your Sales and Profits?

We are indebted to J. W. Jones of the Mohr-Jones Hardware Company of Racine for the following outline, illustrating in concise form why sales are and are not increased. The reason for the assembling of these facts was a discussion of these same factors in a recent group meeting in Racine. The reading of this chart will help to establish in the dealer's mind just what he must do and what he must avoid in order that his increased sales volume, resulting from the application of the principles shown will make his business show a larger profit:

Chart Outline.

Three ways to increase sales:

1. Increase advertising.
2. Special sales-reduced prices; (increased overhead, reduced profit).
3. Increased production of present sales force; (decreased overhead, increased profit).

Loss of sales may be attributed to:

1. Inferior merchandise.
2. Overloaded prices.
3. Low standard of retail salesmanship.

Those departing dollars can be directly traced to:

1. Wrong handling of customers who are "just looking around."
2. Overdone friendliness on the part of the salespeople.
3. Confusing the selection of customers.

4. Sales lost talked to death.
5. Lack of knowledge of stock and merchandise.
6. Putting of negative thoughts into customer's mind.

Various ways to increase sales:

1. Through the power of suggestion—creating curiosity.
2. Selling two or more articles instead of one.
3. Inductive or detective salesmanship.
4. Demonstration of goods.

No wonder a hen gets discouraged. She can never find things where she lays them.—*Rudygram.*

Events and Progress of the Hardware Trade.

**What the Retailers, Jobbers and Manufacturers Are Doing.
Latest Selling Methods and Experiences of Successful Men.**

Hardware Men of Carolinas Will Meet at Columbus.

Secretary-Treasurer T. W. Dixon has notified us that the Hardware Association of the Carolinas will hold its convention in Columbia, South Carolina, May 8, 9, 10 and 11, 1923.

1923 Minnesota Hardware Convention Goes to Duluth.

The coming convention of the Minnesota Retail Hardware Association will be held in Duluth this winter for the first time.

The dates are February 20, 21, 22 and 23, 1923.

The executive board of the association assigned to the advisory board, composed of the last three past presidents, Messrs. Thielman, St. Cloud; Babcock, Anoka, and Ryan, Little Falls; H. O. Roberts, Secretary, and D. M. Andrews, Treasurer, the task of deciding on the location of the next convention. After canvassing the situation thoroughly, and making a special trip to Duluth last week, the decision was made to favor that city.

The convention will be held in the Armory building and the exhibits will be under the same roof. There will be more than 40,000 square feet of space available for the exhibits. The hall will seat between 700 and 800 people and is conveniently located in reference to the exhibits.

The hotels have granted rates that are still another inducement to the members of the association to attend the convention. Secretary Roberts states that the rates are the best offered the association in any city, and every effort will be made to make their guests comfortable.

It is to be expected that hardware men from northern Wisconsin, the upper peninsula of Michigan, eastern North Dakota and even from northern Iowa will at-

tend this convention. Special rail rates will be applied for and the attendance should assure the granting of this privilege.

Invoice Changes Made by Canadian Customs.

An important change in the form of invoice required by Canadian customs, on shipments from the United States to Canada, becomes effective on October one, according to a statement by the American Railway Express Company.

On and after that date, the Canadian Customs will require that the shippers' invoice indicate the country of manufacture or production, as to all imports and will require the shipper to certify that each article covered by his invoice is the product of the country specified thereon. It is important, therefore, that all shippers in this country, who ship to the Dominion, give special attention to the new Canadian ruling.

Formerly, the Canadian Customs required the American exporter to certify that the fair market value shown on his invoice was not lower than the wholesale price, or lower than the actual cost of production at the time or place of shipment plus reasonable profit thereon, but that requirement has been removed from the new form of invoice, effective October one.

Frank Gould Resigns from Ohlen-Bishop Company.

The many friends of Frank Gould, who is known from coast to coast and from Winnipeg to the Gulf, will be interested in knowing that he has resigned his position as General Sales Manager with the Ohlen-Bishop Company, manufacturers of saws and other tools.

Mr. Gould is planning to take a long rest, as he has not taken a

real vacation in seven years; he has not yet formed any definite plan for his future work, but some manufacturer of tools or other lines of hardware will undoubtedly secure his services before long, as he has few equals as a sales organizer.

Are Your Portable Ladders Equipped with Steel Feet?

On February 20, 1922, Andrew Burkard, while in the employ of a hardware firm, Green Bay, Wisconsin, fell from a ladder, causing injuries which resulted in his death. The Hardware Mutual Casualty Company, with whom the hardware firm was insured, is now paying the widow \$14.82 weekly compensation for a period of 304 weeks. The total amount of the Wisconsin Industrial Commission's award amounts to \$4,560.00.

The Industrial Commission investigates every serious accident in the State and the report of their investigator in this case indicated that the firm had violated Safety Order Number 13 of the Commission, and was ordered to pay the widow a penalty of 15 per cent additional compensation, or a total of \$684.00. This amount must be paid by the firm and can not be paid by the Insurance Company, as the latter are prohibited by law from insuring for penalties.

Safety Order Number 13 reads that "All portable ladders must be equipped with steel points or steel feet on the bottom, or other effective means of preventing slipping." In this particular case, Andrew Burkard used a ladder he found on the job which was not properly equipped. The Industrial Commission ruled that the employer must always furnish a ladder properly equipped as specified by law.

Do all your ladders comply with the law?

Do a Week's Washing for Mrs. Jones and She Will Buy a Washing Machine.

Ohio Hardware Merchant Finds That Real Demonstrations in Home Result in Many Sales.

"If you can induce a woman to let you show her in her own home how easy it is to do her washing with your machine, she will find some way of financing the purchase of the machine."

That is the principle on which the Central Hardware Company, Iron-ton, Ohio, goes, judging from the advertisement shown in the accompanying illustration.

And, incidentally, can you think of anything more clever and yet more natural than this offer of theirs?

"If you have electricity in your home we would like to bring one of our Double Tub Washers to your home on next Wash Day and show you how quick it will do your washing, without any obligation on your part whatever. You keep it until your next Wash Day and do your washing with it again, yourself, and if it is not absolutely satisfactory in every respect call us up and we will send our truck after it.

"If this isn't fair you make us a proposition."

We are inclined to believe that the Central Hardware Company received quite a number of telephone calls from housewives asking to have one of their Double Tub Washers sent up.

And there is good business sense in this proposition, as has been proven out in many other cases of similar character.

It is more than probable that the sewing machine which your wife uses was first "left" on trial by one of those buggy salesmen (nowadays they travel in Lizzies), and the lady of the house tried it out to her full satisfaction, and one day you were politely informed that there was a check for fifty-six dollars to be made out for the sewing machine—and you did as you were instructed. She had sold the machine to herself.

The best policy is, of course, to follow up the advertising with personal canvassing, and we have re-

liable information that one of the best known washing machine companies which is finding its largest sales through so-called "direct" agencies, has materially increased its business by training its agents in just such work, the men being instructed to make a preliminary canvass to ascertain where washing is done at home.

WANTED Washings To Do

HERE'S THE IDEA:—If you have electricity in your home we would like to bring one of our Double Tub Washers to your home on next Wash Day and show you how quick it will do your washing, without any obligation on your part, whatever. You keep it until your next Wash Day and do your washing with it again, yourself, and if it is not absolutely satisfactory in every respect call us up and we will send our truck after it.

If this isn't fair, you make us a proposition.

Does
Three
Things
at
Once



Washes
Rinses
and
Wrings

Costs no more than a single tub washer. Your washing should be done at home for sanitary reasons, if for no other.

We are waiting for you to call us.

CENTRAL HARDWARE CO

'Phone 21

On Second St.

Good Advertising for Washing Machines, Run in Iron-ton, Ohio, Newspaper by Central Hardware Company.

These men travel through the alleys and come to the back doors, engage the lady of the house, who may be doing her own washing, in conversation, tell her about their washing machine and make a strong effort to induce her to allow them to send up an electric washer so as to be ready for next Wash Day. No obligation, of course.

On the next Wash Day the man is on the job to run the machine, and if everything goes right, he offers to leave it there for another washing—to be done by the woman herself.

And the experience of these men is that it is much harder to get the machine away from her than it is to persuade her to let them send it up.

Proper Mail Receptacles Must Be Provided Within Four Months.

The following ruling has been laid down by the Postmaster General with reference to the requirement of suitable mail receptacles at residences and business places:

"Mail receptacles save the carriers' time and hasten deliveries. It is, therefore, our desire to have a suitable receptacle of some character at every city or village residence, and if possible, at business houses.

"The absence of a mail receptacle not only tends to inconvenience the patron, but unquestionably results in inferior service through delaying the carrier on his route.

"On account of the delays caused to carrier at dwelling houses where no door-slot or small receptacle is provided and the fact that a large majority of dwellings are thus equipped already, it seems timely, within a reasonable period, to require all who are to receive mail by street carriers at their dwellings to provide such accommodations, the expense of the same being small. Postmasters are, therefore, thus instructed. The length of notice should not exceed four months, although there may be exceptional cases where postmasters should use reasonable discretion or ask for instructions.

"It is not the department's desire, of course, that any shall be deprived of delivery by this requirement, but rather it is earnestly hoped that all will see the reasonableness of it and its advantage to themselves as well as to the carriers. But if it finally becomes necessary mail delivery will be discontinued where no door-slots (preferably) or mail receptacles are provided.

"City or carrier-delivery service should not be extended to any new dwelling not equipped with a suitable receptacle.

"When a patron changes his residence he will be required to provide a receptacle at his new address before being accorded delivery service."

It is estimated that 70 per cent of America's houses already have suitable mail receptacles. But what are you preparing to do about the other 30 per cent.

If you have mail boxes to sell prepare to sell them now. Within four months your big opportunity will have passed, although, of course, mail boxes do not last forever and must occasionally be replaced. This is where you come in.

A window display devoted primarily to these articles would help start things your way. They are suitable to an effective arrangement, and a striking result might be secured through the use of a cut-out showing a postman pointing to Assistant Postmaster General Bartlett's announcement.

August Orders for Hardware Were Best in Ten Months.

W. L. Niekamp, president of the American Iron, Steel and Heavy Hardware Association, was the guest of twenty odd members of that body at a luncheon at the Exchange Club, Boston, on Monday, September 18th. F. H. Butts, of Butts & Ordway Company, Boston, presided at the luncheon. The gathering represented a wide variety of business interests. Each one present was asked to tell the condition of trade in his particular line of business.

Several interesting points were brought out during the informal talks, among them being the fact that August, in a very large majority of cases, was the best month in point of orders booked experienced in ten months. Screw manufacturers are experiencing difficulty in securing material for their product, have more business on their books than they can properly handle and anticipate a shortage of goods this winter.

A car shortage that will seriously affect business this winter, which cannot be avoided under the most favorable conditions between now and January 1st, is facing the country, according to one of the best posted men in New England on railroad conditions. Sheets are moving out of jobbing hands in larger weekly tonnages than at any previous time this year, while there has been quite a slump in sales of structural steels. Stress was laid on the fact that employers of this country, unlike organized labor, have no leader which all merchants must follow. It was asserted that never before in our business history has there been a need for such leadership as today.

Stambaugh-Thompson Company Uses Well-Planned Stock Sheet.

The Stambaugh-Thompson Company, Youngstown, Ohio, uses a stock sheet that gives them real information. A double column is provided for each item, one showing the quantity bought, the other the quantity sold. An inventory is usually taken at least every two weeks.

This system shows which are the good sellers, as well as showing up the slow moving articles, enabling the merchant to balance his stock so he will always have a good stock of the better selling merchandise and keep the slow-movers down. This increases turnover and decreases the paint stock investment.

Besides, these cards show what lines sell best at different seasons of the year, enabling the buyer to have his seasonable merchandise on hand when it is in demand.

Suggestions and Plans for Window Displays.

Instructive Examples from Exhibits in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

TOOL WINDOW DISPLAY PUTS LIFE IN SALES.

There is something peculiar about almost any window display of tools.

Somehow or other, men and boys will stop to look at them even if they are in a hurry. Most have

or his tool chest is not complete.

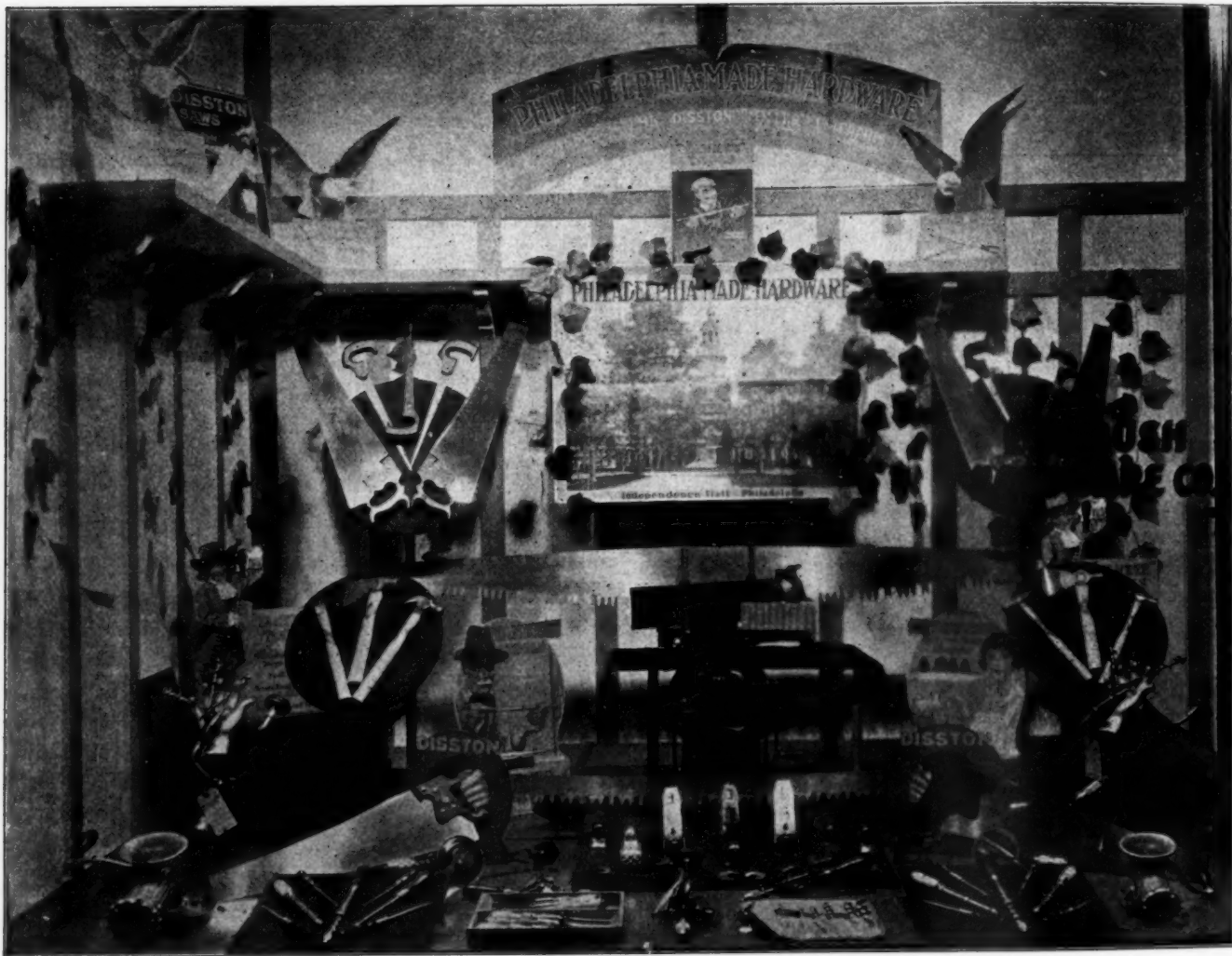
So a well arranged window display of tools always draws onlookers, and many of these onlookers will turn themselves into customers if properly attended to when they enter the store.

In the accompanying illustration we show a fine example of a tool

play as follows:

"The tools were not laid parallel, as you will notice, the object being to so vary the display as to direct attention to the center portion; also that by the use of standards and shelves many of the tools are raised to the level of the onlookers' eyes.

"The background was made of



Effective Window Display of Tools, Arranged by C. W. Schepman for E. M. Bush Hardware Company, Evansville, Indiana.

some hobby. Some like to tinker with machines; others find pleasure in the use of the saw and plane; still others spend their spare time in the pursuit of other trades. Whatever the hobby, however, it means the use of some kind of tools, and it matters not how many tools a man has, if he sees a new type—that new type he must have,

window display. It was arranged by C. W. Schepman for the E. M. Bush Hardware Company, Evansville, and was submitted for the recent Window Display Competition which is one of the many methods by which AMERICAN ARTISAN AND HARDWARE RECORD serves its subscribers.

Mr. Schepman describes the dis-

composition board tinted so as to harmonize with the fixtures, and artificial leaves added effect to the setting.

"All the tools came from companies in one city."

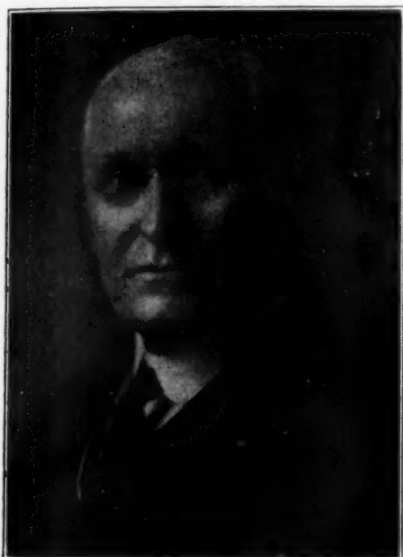
"When you are handed a lemon, add sugar and make lemonade."—*Rudygram.*

Byron A. Walker, Stricken Suddenly, Passes Away.

It is with much regret that we announce the sudden death of Byron A. Walker, President of the Lovell Manufacturing Company, at Erie, Pennsylvania, on Thursday, September 21st.

He had gone for his usual forenoon walk down to the fish hatchery on the lake front and must have had a stroke on the pier, for the coroner announced that he was dead before he fell into the water.

The funeral took place Saturday, September 23rd, from his late home on West Sixth Street in Erie and was attended by a very large gath-



Byron A. Walker.

ering of his business associates and friends, many coming from other cities to pay their last respects to the man they had learned to love and esteem for his loyalty and devotion to the best in civic and business life.

Mr. Walker was born September 12, 1852, near Meadville. He came to Erie about 1866 and made his home there ever since.

Sixteen years later he was one of the executives in the Lovell Manufacturing Company which was formed in 1882. Under his guidance the Company has grown to be the largest of its kind in the world.

Progressive in business, Mr. Walker found time, too, to give at-

tention to public and religious affairs. He was greatly interested in the work of the Young Men's Christian Association and was a liberal giver to its building fund, as well as to other local institutions of civic uplift. A large portion of his income was used in charitable work, but few knew how large were the sums he gave. He was unassuming and modest, desiring no public recognition of his deeds of benevolence.

Mr. Walker was a 32nd degree Mason, a trustee of the First Methodist Church of his city, president of one bank, director of another and a trustee of Allegheny College at Meadville, the city of his birth.

His widow, a son, Howard Byron, and a daughter, Mrs. Ellis Briggs, are left to mourn the loss of a loving husband and father.

In an editorial written the day after Mr. Walker's death, the *Erie Dispatch-Herald* says:

"Mr. Walker's memory will linger always in the monuments he has left. And when his epitaph is written, it will read, 'He did much to help others.'"

In this, those of us who knew him—and to know him was to love and admire him—will all agree.

Do You Use a Door Check on Your Store Entrance?

The old saying, "Shoemakers' children have no shoes," seems to apply to other lines also. It is quite common to find a hardware dealer who is enthusiastic about door checks but does not use them on his own door, which is the best demonstrating model you can get and is proof that you believe in their use.

One hardware store goes a step farther and puts a sign on the door reading like this: "Don't slam this door. It will close itself." Naturally this directs attention to the check.

Many builders' hardware salesmen find it profitable to make a canvass of the stores in their towns. They first make a deal with some carpenter to install the checks at a

fixed price and then quote the prospect a price for the check installed.

One salesman who tried this plan always selected a raw day for the work and says when he went into a store that was not using a check on the entrance he always left the door wide open, demonstrating effectively the need of it.

There are several points which the salesman should use in making these sales. The door check closes the door, does it noiselessly, protects the glass from breakage, and saves many steps during the year. Another point which does not want to be overlooked is that the merchant using a door check can tie down his latch bolt so that customers merely have to push in order to get in.

Frequently women shoppers have trouble getting into stores because their arms are full of bundles and the latch bolt sticks. Some stores even find it necessary to keep a boy at the door to open and close it for customers. These inconveniences will be avoided by using a door check and fastening the latch down. A small sign on the outside of the door with the word "Push" will do the rest.

New Interests Control 1900 Washer Company.

A controlling interest in the 1900 Washer Company, Binghamton, New York, has been acquired by the Maynard H. Murch Company, investment brokers, Union National Bank Building, Cleveland, by the purchase of the interest in that company held by the estate of Thomas Crary.

W. S. Quinlan of the Murch Company has been elected president of the 1900 Washer Company, succeeding Calvert Crary, who has been head of the company since the death of his brother, Thomas Crary, about a year ago.

H. L. Barker, sales manager of the 1900 Washer Company, has resigned and in the future will be identified with The Meadows Company, Bloomington, Illinois. J. W. Behan continues as general manager of the firm.

German Cutlery to Be Billed in Dollars and Cents.

As a result of the depreciation of the mark, German cutlery manufacturers in the Solingen district have agreed to bill all orders for export to the United States in dollars and cents, and at minimum prices based on a certain percentage of advance above the pre-war gold prices. Thus pocket knives, scissors, and razors are to be billed at not less than 25 per cent above their pre-war gold value, while on table cutlery and pearl-handled pocket knives the advance over the pre-war price is fixed at 40 per cent. This decision is said to have been made after the manufacturers had discovered that selling goods abroad in marks during the past two years had been a source of considerable loss.

One of the most important factors in retailing goods is cleanliness. To be neat and clean yourself, and keep your stock neat, clean and orderly is a resource that is within the reach of every merchant, and to have your place of business open promptly and in ship-shape, and be ready to meet every prospective buyer with a smile, will make a good start towards a day's business.

Coming Conventions

National Hardware Association Marlborough-Blenheim Hotel, Atlantic City, New Jersey, October 17, 18, 19, and 20, 1922. T. James Fernley, secretary-treasurer, 505 Arch Street, Philadelphia, Pennsylvania.

American Hardware Manufacturers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, October 18, 19 and 20, 1922. F. D. Mitchell, secretary-treasurer, 1819 Broadway, New York City.

Western Implement, Vehicle and Hardware Association, Kansas City, Missouri, January 16, 17, 18 and 19, 1923. H. J. Hodge, Secretary, Abilene, Kansas.

Texas Hardware and Implement Association, Dallas, Texas, January 23, 24 and 25, 1923. A. M. Cox, Secretary, 822 Dallas County Bank Building, Dallas, Texas.

Mountain States Hardware and Implement Association, Denver, Colorado, January 23, 24 and 25, 1923. W. W. McCallister, Secretary-Treasurer, Boulder, Colorado.

Kentucky Hardware and Implement Association and Exhibition, Jefferson

County Armory, Louisville, Kentucky, January 23, 24, 25 and 26, 1923. J. M. Stone, Secretary, Sturgis, Kentucky.

West Virginia Hardware Association Convention and Exhibition, Huntington, West Virginia, January 30 and 31, and February 1, 1923. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

South Dakota Retail Hardware Association, January, 1923. (Place to be announced later.) H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

Idaho Retail Hardware and Implement Dealers' Association, Boise, Idaho, January 31, February 1 and 2, 1923. E. E. Lucas, Secretary, Hutton Building, Spokane, Washington.

Indiana Retail Hardware Association Convention and Exhibition, Indianapolis, Indiana, January 30 and February 1 and 2, 1923. G. F. Sheely, Secretary, Argos, Indiana.

Oklahoma Hardware and Implement Association, The Auditorium, Oklahoma City, Oklahoma, January 31, February 1, 1923. W. A. Clark, Secretary-Treasurer, 209½ West Main Street, Oklahoma City, Oklahoma.

Nebraska Retail Hardware Association, Convention and Exhibition, February 6 to 9, 1923, Omaha, George H. Dietz, Secretary-Treasurer, 414 Little Building, Omaha, Nebraska.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 6, 7, 8, 9, 1923. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Virginia Retail Hardware Association, Norfolk, Virginia, February 7, 8 and 9, 1923. Thomas B. Howell, Secretary, Richmond, Virginia.

Wisconsin Retail Hardware Association, Milwaukee Auditorium, Milwaukee, Wisconsin, February 7, 8 and 9, 1923. P. J. Jacobs, Secretary-Treasurer, Stevens Point, Wisconsin.

Pennsylvania and Atlantic Seaboard Hardware Association Convention and Exhibition, Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14, 15 and 16, 1923. Sharon E. Jones, Secretary, 1314 Fulton Building, Pittsburgh, Pennsylvania.

Ohio Hardware Association Convention and Exhibition, Cleveland, Ohio, February 13, 14, 15 and 16, 1923. Exhibition in the new Municipal Hall. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Illinois Retail Hardware Association Convention and Exhibition, Hotel Sherman, Chicago, Illinois, February 13, 14 and 15, 1923. L. D. Nish, Secretary-Treasurer, Elgin, Illinois.

Iowa Retail Hardware Association Convention and Exhibition, Des Moines, Iowa, February 13, 14, 15 and 16, 1923. A. R. Sale, Secretary, Mason City, Iowa.

North Dakota Retail Hardware Association, Grand Forks, North Dakota, February 14, 15 and 16, 1923. C. N. Barnes, Secretary, Grand Forks, North Dakota.

Missouri Retail Hardware Association Convention and Exhibition, Planters Hotel, St. Louis, Missouri, February 20, 21 and 22, 1923. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis, Missouri.

Minnesota Retail Hardware Association, Duluth, Minnesota, February 20, 21, 22 and 23, 1923. H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 21, 22 and 23, 1923. George A. Fiel, Secretary, 10 High Street, Boston, Massachusetts.

New York State Retail Hardware Association Convention and Exposition, Rochester, New York, February 20, 21, 22 and 23, 1923. Headquarters, Powers Hotel. Sessions and Exposition at Exposition Park. John B. Foley, Secretary, City Bank Building, Syracuse, New York.

Hardware Association of the Carolinas, Columbia, South Carolina, May 8, 9, 10 and 11, 1923. T. W. Dixon, Secretary-Treasurer, Charlotte, North Carolina.

Arkansas Retail Hardware Association, May, 1923. (Place to be announced later.) L. P. Biggs, Secretary, 815-816 Southern Trust Building, Little Rock, Arkansas.

National Retail Hardware Association, Richmond, Virginia, June, 1923. Herbert P. Sheets, Secretary-Treasurer, Argos, Indiana.

Southeastern Retail Hardware and Implement Association, covering Tennessee, Alabama, Georgia and Florida. (Date and place to be announced later.) Walter Harlan, Secretary-Treasurer, 701 Grand Theater Building, Atlanta, Georgia.

Retail Hardware Doings

Florida.

J. C. Murrey of Chicago will open a hardware store in the new Nutt block in Tavares soon.

Iowa.

C. R. Nelson has sold his hardware store at Hopkinton to the Peoples Hardware Company of Minneapolis.

Michigan.

Haffner and Lytle, well known hardware and implement dealers at Lennon, have purchased the hardware stock of M. D. Phelps and Company at Flushing and will continue the business at that place.

George Hoban of St. Ignace has purchased the Mulcrone block, in which he will move his hardware stock.

Minnesota.

The Petrie Hardware Company of Bemidji have opened a hardware store at Pine River.

George Espenson and his brother have bought a hardware store at Madelia.

Missouri.

A deal has been completed at Princeton whereby Ovie Collings becomes the owner of the West Side Hardware store, which formerly belonged to Pauley Brothers.

W. J. B. Kilburn has purchased the hardware stock of W. E. Bassett at Chula.

August Berghofer, successful hardware dealer of Palmyra, has purchased the stock of the Bier Hardware Company, also of Palmyra, and has combined the two stocks.

Ohio.

At Middletown the Dohn Hardware Company has opened for business.

F. C. Burdick of West Millgrove has opened a hardware store at Risingsun.

Study and Interpretation of Advertisements.

You Can Make Your Advertisements More Gainful by Avoiding the Faults and Profiting by the Good Qualities of Others.

Many hardware merchants have found it good policy to advertise "Specials" for certain days in the week, especially in larger towns and cities, rather than letting the offer stand for an entire week. Here is a one-column advertisement, five inches deep, run by K. C. Roberts in the *Herald*, Oskaloosa, Iowa,

SPECIAL!



Saturday Only

8, 10, 12 and 14-Quart

Galvanized Pails
25 and 40c values

for 19c

K. C. ROBERTS

Hardware Company

Phono 373

283d2

which offers four sizes of galvanized pails, all at one price—19 cents.

That is good, specific advertising of merchandise for which there is always a call and so we are quite sure that Mr. Roberts pulled a lot of trade into his store on that Saturday.

The display is well arranged. First, a good sized headline, next an illustration showing the articles, then the description, and finally the price, followed by the name of the store and the telephone number.

Send in Your Ads.

Whenever you think that you have prepared a really good advertisement send a proof of it to us for comment. Frequently we can help you to make your advertising still more attractive and efficient.

If for some reason your advertisement fails to bring the results you expected, send it to us. We may be able to find the element that is lacking.

Our comments are written for the purpose of helping you to reap the greatest possible returns from your advertising.

* * *

If you run out of an item which has been offered at a special price before everybody has secured as much or as many as he wants, it is

usually a good idea to buy another lot and make another offer, referring to the fact that you can now give "the people" another opportunity to obtain the special value.

This is what the Gatewood-Cogdell Hardware Company, Americus, Georgia, did, as shown in the advertisement shown herewith, which was published in the *Americus Recorder* in a space of six inches, double column.

The display is effective and the wording is commendable.

* * *

Conservatism is a good quality to possess but, like many others, it may be carried to excess. Never be so conservative that you can not see the value of a new idea or suggestion. When you reach the un-receptive stage you have ceased to progress, and as one of the laws of nature is that nothing stands still, you will probably begin to go back.

The Greatest Value Ever Offered



**\$3.50 Aluminum
PITCHERS**

For \$1.59

We have been successful in securing another big lot of those wonderful \$3.50 Aluminum pitchers, with aluminum handles, which we will sell as long as they last at\$1.59

The Same With Kocobo Handles \$1.49

This is Without a Doubt The Greatest Value We Have Ever Offered. If You Did Not Get One Our Last Sale, Just Ask Your Neighbor

Gatewood-Cogdell Hardware Co.

Best Grade Garden Hose
25 Feet for \$2.95

Corner Lee and Forsyth Streets

Facts of Warm Air Heating and Ventilating.

Reports of Progress in Warm Air Heater Research Work. Ventilating Factories, Theatres and Other Buildings.

This Furnace Installer Goes After Business in Right Way.

J. W. Loney, who is in the warm air furnace business at Fort Wayne, Indiana, looks to the future with every confidence that business is going to be good. In the increasing building activity which is evident in Fort Wayne, as it is in every part of the country, Mr. Loney sees reason for the belief that 1922 should be a record breaker as far as the heating business in his territory is concerned. To back up his confidence in the business outlook, Mr. Loney has added two salesmen to his sales force.

Mr. Loney has developed a very nice business in the city of Fort Wayne, and can point to an un-

usually large number of Gilt Edge furnace installations as evidence of the fact that selling a higher quality heater, properly and correctly installed, is bound to be an important factor in the development of a permanent and profitable heating business. He is of the aggressive type, who believes that business that is worth having, is worth going after. He is also an exponent of the Service idea in business development, and believes that nothing will promote good will and sales more readily for any business than Service rendered to the customer energetically and willingly, and in order to be able to render adequate Service to his customers, he has just added a new automobile service truck to his equipment.

Special Attention to Ventilation.

Under the general slogan of "Good Health Week," the part played by good ventilation will be featured on the basis that "the air we breathe should be as pure as the water we drink." Under this heading will be taken up the ventilation of homes, especially kitchens; the attractiveness of well-ventilated



Envelope Seal.

stores, the importance of adequate ventilation for churches, theaters, lodge or assembly halls the increased activities of office help in well-ventilated offices, the advantages of furnishing fresh air in restaurants and cafes and other similar places where odors are apt to be found. Finally, the life force of ventilation in factories will be emphasized, not only for removing fumes, vapor, smoke, steam, acids, etc., and for drying and cooling, but also to maintain healthful air conditions and consequently a larger output.

Enthusiastic endorsement of "Good Health Week" has been given by Secretary James J. Davis, of the Department of Labor, who states in a letter to Secretary-Treasurer William F. Hatch of the Good Health Week Promotion Bureau:

"I have just read an outline of the work which is to be undertaken by the Good Health Week Promotion Bureau during the week of October 23 to 30, and it affords me pleasure to heartily endorse the bureau's efforts.

"Any organization movement for better health should have the sup-

Ventilation of Homes, Stores, Factories, Etc., To Be Featured During Good Health Week.

*Nation-Wide Campaign for Better Ventilation
Will Be Started in Earnest October 23, 1922.*

GOOD Health Week is to be observed on a national scale, October 23-30 next. Everything that pertains to better sanitation and a more healthful environment and which may be popularized by the words, ventilation, sanitation and personal hygiene, will be featured during that week on a scale never before attempted. Heating and ventilation, naturally, will come in for a prominent place in the campaign and both manufacturers and dealers are fully alive to the possibilities of bringing home to the public in a new and forceful way the advantages, as well as the best practice, in the supply of fresh air.

Started at the instance of the Ilg Electric Ventilating Company of Chicago, the movement has rapidly gathered impetus. During the past month, for instance, a number of

manufacturers have been using the seal on their letters and other mail matter bearing the slogan, "Good Health Week, October 23-30, 1922."

A committee headed by G. O. Breidert, general production manager of the Ilg Electric Ventilating Company, has been formed to further the movement. The other members of the committee are William F. Hatch, of the Palmolive Company; William F. Woolley, manager of the National Trade Extension Bureau; Dr. J. G. Lepp, of the Modern Hospital Publishing Company; Charles G. Parks, of the American Linen Supply Association; William A. Biddle, of the American Laundry Machine Company; and Dr. J. N. Hurty, commissioner of health for the State of Indiana.

port of every man, woman and child in America. It is a duty we all owe to ourselves, our neighbors and our nation. Healthy families are usually happy families, and it is up to each one of us to contribute our assistance in that direction.

"The medical profession has enough to do in bringing back health to the sick; the laymen can himself prevent most of his ills and he should do his part. If there is any way, personally or officially, that I can help out in an educational campaign to create more widespread interest in personal hygiene, sanitation and ventilation in the home or in industry, thus giving to us a state of better health, my services are at your command."

The full personnel of the Good Health Week Promotion Bureau is as follows: Chairman, G. C. Breidert, Ilg Electric Ventilating Company; William F. Heissenbittel, past president of the Linen Supply Association of America; William J. Woolley, secretary-manager of the National Trade Extension Bureau; William H. Biddle, of the American Laundry Machinery Company; A. T. McCormick, M. D., State Health Commissioner of Kentucky; and William F. Hatch, of the Palmolive Company.

Country-Wide Campaign Planned.

An idea of the extent of the campaign can be gained from the statement that in addition to the cooperation of newspapers, magazines and trade journals, women's clubs and school officials throughout the country are cooperating to impress the basic truths upon the minds of children.

Every firm, industry or association has letters, circulars, invoices, etc., going through the mail daily. Special stickers have been for use on such stationery, following the design shown in the accompanying illustration. These will be furnished at a nominal cost. Electrotypes of the seal will also be furnished practically at cost. For every \$2.50 subscribed to the campaign 1,000 seals will be furnished the subscriber. Additional seals may be purchased at 50 cents per

1,000 by subscribers and \$1.00 per 1,000 by non-subscribers.

Plans for Local Cooperation.

Supplementing the general campaign, local lectures are being planned, as well as proclamations to be issued by governors, mayors, etc. Local clubs such as the Rotary, Kiwanis and Civic Clubs, Chambers of Commerce, etc., will be urged to have addresses made before their members on the possibilities of Good Health Week as a public benefit. The Public Good Health Week executive Committee is prepared to furnish good health articles on the subject of ventilation, sanitation and

personal hygiene which may be published in local newspapers. Eminent physicians and health authorities will also write articles on the subject which will be released in national mediums, as well as through the newspaper syndicates.

A very complete idea of the Good Health week campaign is given in a circular issued by the bureau on "Telling the Nation." This circular, as well as any other information on the subject, may be obtained from the Good Health Week Promotion Bureau, Room 704, 209 Grand Avenue, Milwaukee, Wisconsin.

Are You Unconsciously Putting Brakes on Your Warm Air Heating Plants?

R. W. Menk Says That Many Installers Are Reducing the Capacities of Furnaces By Failure to Allow for Friction.

IN a very plain, easy-to-understand, article by R. W. Menk, of the Excelsior Steel Furnace Company, the fact is brought out that due allowance must be made for friction and resistance offered by changing the direction of the cold air return ducts.

Mr. Menk writes as follows:

Many engineers and manufacturers of warm air heating apparatus, as well as large numbers of furnace installers have long recognized the advantages of inside return air circulation in a warm air heating system as compared to the outside air supply system used for many years, and still in use to some extent, especially in the Eastern section of our country.

It is not my intention to enter into a lengthy discussion of the merits of these two systems but rather to try to bring out some of the facts about inside circulation to the extent that greater thought be given to the application of this method of air supply.

Air movement through a pipe or duct can only be produced by creating a greater pressure at the starting point than that existing at the outlet; further, no movement of air can be produced without overcom-

ing the ever present resistance to free air flow.

Resistances in ducts are caused largely by friction and interruptions due to changes of the directions of the flow, changes of the cross sectional area of the ducts, or obstructed by the presence of dampers, registers, etc.

Therefore, to move a certain quantity of air through a particular sized duct in a given time requires the taking into consideration, (in addition to the required volume), the head pressure, friction and resistance to the flow; these three items are almost invariably overlooked in warm air heating.

The determining of the factors, pressure, friction and resistance in fan or blower work seems to have been worked out quite positively, at least to such extent as to afford their application to commercial work, but their application to gravity flow in connection with warm air heating has not been given sufficient attention, in fact very little has been said or written about them, which accounts very largely for the success or failure of systems of approximately the same size and capacity. In addition to the above there seems to have been no con-

sideration given to what the air must contend with, when flowing across floors from given points to the return air ducts, namely, the extra turns, around partitions, stairways, furniture, etc., and the attempt to circulate cold air past or around warm air registers.

Gravity flow in connection with a warm air heating system is a very much different problem as compared with fan or blower work. Warm air at 132 degrees and return air at 62 degrees constitutes so little difference in weight that any tendency to interfere with its flow upsets circulation and naturally develops failure.

As an illustration, let us take a concrete example. A warm air heating system having a warm air pipe area of 600 square inches. By consulting manufacturers' data one finds that $\frac{3}{4}$ or 75 per cent is all of the air necessary to fill same, upon the assumption that the air is flowing to the furnace at zero, thereby allowing $\frac{1}{4}$ or 25 per cent for the expansion of the air. The data goes further in many cases and states that when inside air supply is installed that warm and cold air areas shall be equal, but makes no mention of allowances for friction or resistance losses—and consequently accounting for the thousands of warm air furnace failures (or partial failures), throughout the country.

One installer will live up to the rule religiously and install a sound return duct from a face of proper area to the furnace and connecting same with the furnace through a shoe or boot of proper area, thereby delivering to the furnace the required amount of air, with the least amount of friction and resistance, and apparently to equalize the warm air pipe area.

Another says it isn't necessary and it's too expensive to put on a shoe and he decides to connect the round pipe directly to the casing—(and then what happens.)

Still another believes it wrong to connect a round pipe of such large diameter directly into the casing and decides that the best method is

to oval the pipe, perhaps cutting the area of the pipe in half—(and then what happens?)

Still another objects to a large round pipe being extended on an angle from the ceiling of the basement to the furnace and he decides to drop the pipe directly to the floor and carry the same through a duct under the floor to a pit under the furnace, underground duct being round or rectangular!—and then what happens?

And then another decides to carry a rectangular duct upon the ceiling over the furnace and drop a round or rectangular duct to the base of the furnace and connect same to furnace casing direct or through shoes or pit—and something else happens.

And then along comes the fellow who says, "you fellows are all wrong. The way to do this job is to carry the air between the floor joists by lining the under sides of the same over to the furnace," and then connects same to the furnace casing by either of the above methods—and then what happens?

Now the question to be solved is which is the best method and what allowances shall be made to overcome the friction and resistance, and also which should be entirely eliminated and information spread broadcast to avoid their use.

I am not prepared as yet to say just what the factors shall be for increasing the areas of the various ducts under the varied conditions but in our furnace practice at present we use the factors, .01, .02 and .021. They are of course empirical but have served to the extent that in most cases the installations have given excellent satisfaction when judgment has been used in their application.

The factor .01 is applied when a round metal duct is carried from the cold air face to furnace.

The factor .02 is used where ducts are made of metal and carried on ceilings to points near heater.

The factor .021 is used for ducts made of brick or cement and carried under ground to a furnace pit. No extra allowance is made for

duct from floor to pit, as the area of the cold air face and pipe is always in our case very liberal.

If a round duct was extended from the cold air face to furnace and connected to furnace through shoe the factor would be .01 and if the distance was 14 feet the round duct should be increased as follows:

$$600 \times .01 = 6; 6 \times 14 = 84$$

Now let us suppose that it was necessary to supply the 600 in the following manner:—10 feet of horizontal duct on the ceiling and rectangular or round pipe to furnace, problem would be as follows: $600 \times .02 = 12; 12 \times 10 = 120$

Now let us suppose that pipe dropped to a duct under floor and that said duct was 6 feet long, the problem would be worked out as follows:

$$600 \times .021 = 12.6$$

$$12.6 \times (10 \text{ plus } 6) = 201$$

The above are only illustrations, as we seldom take over 450 from any one location, preferring to return the air from several points in the building and preferably near outside walls.

Will Make Ventilation Code American Standard.

A movement is under way to have the code for the ventilation of public and semi-public buildings of the American Society of Heating and Ventilating Engineers approved by the American Engineering Standards Committee as "American Standard." This code, which was adopted by the heating engineers' society in 1915, is familiar to most of our readers. It was prepared by a committee of the American Society of Heating and Ventilating Engineers at a time when the ventilation of motion pictures and similar quarters was very much in the public eye. At first the program was laid out to meet the requirements for such theaters, but, as finally compiled, the code was made to cover all classes of buildings. Section I relates to general matters pertaining to all classes of buildings. The three remaining sections relate to

schools and colleges, factories, and theaters, respectively.

Among the States which have utilized parts of the code in their regulations are: Illinois, Indiana, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio, Pennsylvania, Utah, Virginia and Wisconsin.

A committee headed by Sidney J. Williams, chief engineer of the National Safety Council, has been appointed by the American Engineering Standards Committee, to investigate the status of the code in the industry and the desirability of approving it. The other members of this special committee are: A. S. Armagnac, editor of *The Heating and Ventilating Magazine*; W. R. Addicks, American Gas Association; M. W. Alexander, National Industrial Conference Board; L. W. Chaney, Bureau of Labor Sta-

tistics; C. B. Connelley, Association of Governmental Labor Officials of United States and Canada; E. A. Holbrook, Bureau of Mines; Sullivan W. Jones, American Institute of Architects; M. G. Lloyd, Bureau of Standards; C. R. Riley, Clark, MacMullen & Riley, representing the American Society of Heating and Ventilating Engineers; G. E. Sanford, American Society of Safety Engineers; David Van Schaack, Safety Group, Aetna Life Insurance Company; and R. C. Williams, representing the United States Public Health Service.

The American Engineering Standards Committee, it is announced, will be very glad to learn from those interested of the extent to which they make use of this code, and to receive any other information regarding the code in meeting the needs of the industry.

in winter months we may appreciate the amount of wasted coal and energy. Manufacturing plants, presumably, have expert firemen. Either they can not or do not care to eliminate such waste. But the ordinary householder or apartment janitor is not a scientific fireman. If he can cut his coal consumption 40 per cent, or even 20 per cent, by becoming such an expert he should find both profit and sweet revenge upon the coal man by doing so. It is a game worth learning."

The articles to which the *Chicago Daily Tribune* refers appeared in our issues of June 17th, on pages 21 and 22, July 15th, on pages 25 and 26, and August 19th, on pages 24 and 25.

We suggest that every installer of warm air furnaces read these articles again very carefully and then make it their business to inform their customers thoroughly on the methods suggested by Mr. Stevens.

It will make friends for them and that is what you need in your business.

While coal may not be as difficult to secure this fall as some people think, it will most likely cost considerably more than most people will care to pay, and anything you can do to help your customers save on their coal bills will result in good will for you.

This Will Quicken Return of Undeliverable Parcels.

If you send parcel post package and want it back promptly in case it can not be delivered, you should place on the package a pledge to pay return postage, such as "Return postage Guaranteed." It will then be returned and the postage collected on delivery. Undeliverable packages without this pledge are held and the sender notified and in such cases the return postage must be sent to the office where the packages are held. This causes delay and unnecessary correspondence and expense both to the sender and the postal service.

A storage battery will not create electricity.

Chicago Tribune Publishes Editorial Commending Special Articles on Coal.

Methods Outlined by J. S. Stevens in Issues of June 15th, July 17th and August 19th Are Approved.

IT DOES not happen very often that the great metropolitan newspapers find space on their editorial pages for reference to articles in trade papers, but in the *Chicago Daily Tribune* of Monday, September 25th, the following editorial was published in which a good piece of advice is given which originally appeared in AMERICAN ARTISAN AND HARDWARE RECORD:

Profitable Revenge on the Coal Man.

"The high cost of coal may make us hot, but not hot enough to counteract a northeast wind. We may get up a high pressure of steam in an attack upon coal operators who are saddling us with more than the cost of a strike which they settled after their winter market was assured, but it is not the sort of steam to run a factory. Whether we like it or not we shall pay exorbitant prices for coal this winter. Revenge would be sweet. It would be just. But how is a man to refuse

to buy coal and so spite the profiteers when he is cold?

"According to a writer in a trade magazine there is a way. He says we can save 43 per cent of our domestic coal consumption by proper firing. If that is correct it offers the way to revenge upon the coal profiteers and at the same time keeps money in our pockets. We can pay 20 per cent more for coal if we burn 40 per cent less and still save money and keep warm and strike a blow at the impudence of the coal operators.

"The secret, according to James S. Stevens, writing in AMERICAN ARTISAN AND HARDWARE RECORD, is to so bank the fire that it will burn constantly from one side, eating into the coal regularly and burning in blue flame the gas which appears as black smoke if it goes up the chimney unburned.

"From the amount of black smoke which appears over Chicago

Practical Helps and Patterns for the Tinsmith.

Aids to the Improvement of Craftsmanship and Business.
News from Various Branches of the Sheet Metal Trade.

PATTERNS FOR AGITATOR BLADES.

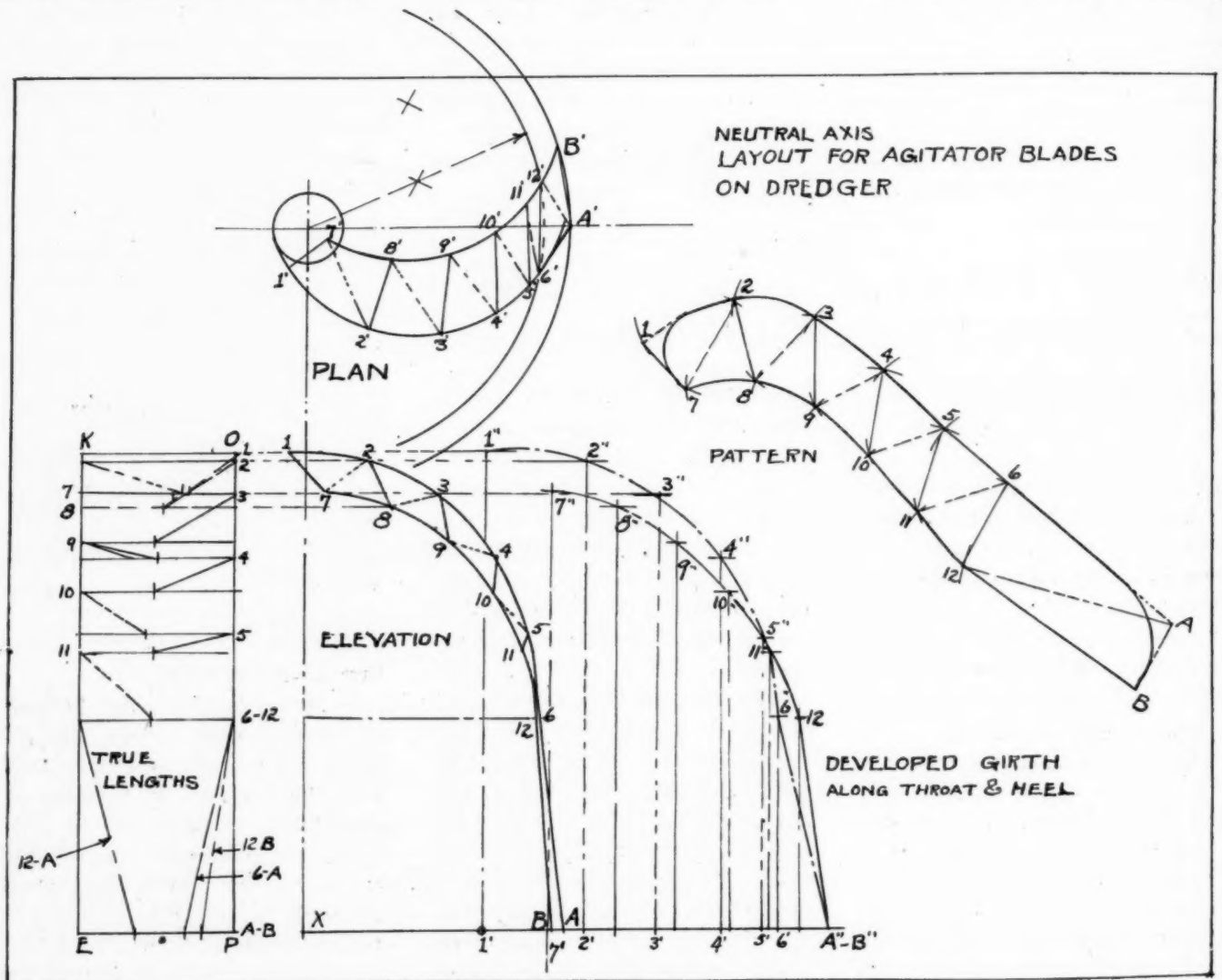
By O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri. Written especially for American Artisan and Hardware Record.

On dredges large agitator blades are made for squaring up the dirt in the bottom of rivers or bays,

rapidly. So high penciled plates are welded to the casting to take the place of the old blades and this makes it cheaper than getting new castings and blades. These blades are about 68 inches wide, shaped up with a dishing die, after which the cutting edge is beveled.

First, draw the elevation taking on the outline shown, and then detail the plan. Divide the lines in

Pick the heel lines of plan as 7'-B and set as 7'-B'' to the right of elevation. Also pick the lines 1'-A' from plan and set as 1'-A'' to the right of elevation. From each of these points erect lines and then from each point in elevation square over horizontal lines to intersect those in stretchout as in points 7''-8''-9'', etc., also 1''-2''-3''-4'', etc. These will be the girth lines or



Patterns for Agitator Blade.

lakes, etc., so that hydraulic means may be provided for filling in low places and thereby producing habitable soil. There are five of these blades needed to each agitator and while the casting stays in good condition the blades will wear out very

elevation in equal spaces and from these points erect them into plan as shown by similar number. Observe the plan gives the flare and curvature while the elevation gives the curve and the taper. So a developed girth must be set out as shown.

spaces used in developing the pattern.

After this, we develop the diagram of true lengths by considering the rises in the elevation and squaring them over on the lines O-P and

E-K. Then pick the plan lines 1'-7', also 7'-2'; 2'-8', etc., and set them off into diagram of similar numbers. This will give the true lengths as shown. After this the pattern is laid out much the same

as all fittings of a triangulation nature. The corners at A and point 1 are rounded out to suit conditions. This must afterwards be formed up to suit the profile and dish out to the agitator of lines required.

Some of the Simple Rules Which Make Erection of Zinc Gutters and Spouts Easy.

Attention to These Details Will Produce a Job That Will Stand for Years as Credit to Erector.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD
by R. B. Cook, of David Lupton's Sons Company, Philadelphia.

ZINC has been used for roofing, conductor pipe, etc., in Belgium, France and Germany for almost a hundred years. When properly erected it has proved itself wonderfully durable and reliable. As a roofing material it lasts indefinitely without painting. As a material for eaves trough and conductor pipe it outlives several times over the galvanized steel or iron commonly used in this country.

In 1900 an examination was made of some zinc roofs on well-known buildings in Belgium, such as churches, railroad stations, zoological gardens and large residences. Some of these dated back to 1850, 1830, and even to 1811; and there were many buildings with roofs 25 or more years old.

All these roofs were in good condition and had had few or no repairs.

What is true of zinc on roofs is equally true of conductor pipe and eaves trough. *Considering both its first cost and its life, it is the most economical form of sheet metal spouting.*

Those old installations of zinc spouting were made entirely by hand, with soldered seams. The double lock seams of American conductor pipes and elbows are impracticable with commercial sheet zinc on account of its brittleness. Hence zinc spouting has never been successfully introduced here until now.

Commercial zinc, however, is brittle chiefly because of the impurities which it contains. *Pure*

zinc is almost as soft as copper, and is more workable than soft steel.

Recently rolled zinc has been produced, from the ore of a certain mine in New Jersey, which is almost entirely free from those impurities which cannot be commercially refined from ordinary zinc ore. The zinc produced from this New Jersey mine is more than 99.9 per cent pure.

This remarkable purity overcomes entirely the brittleness of ordinary zinc and can be worked like soft steel or copper, with no sign of cracking.

The tinsmith who specializes in Pure Zinc Spouting will become the most sought roofing specialist in his town, as soon as the superior durability of this zinc spouting becomes known.

The material cost of zinc spouting is only about twice that of the best galvanized steel. In view of the durability of a properly erected job, the owner will willingly pay an additional price for the added care and experience required for its erection. When you have erected a few jobs, the simple precautions needed for success will become second nature to you, and no more time will be required than to erect a first-class job of copper spouting.

The tinsmith engaged by a house owner has only to tell his customer the facts about Pure Zinc Spouting to be assured of an order for the better job at the better price, and no householder who finds his zinc

spouting making good will fail to tell his neighbors.

Zinc has certain peculiarities which require it to be handled quite spouting than to erect copper or differently from copper or galvanized steel. These peculiarities do not make it harder to erect zinc galvanized steel, but they do make it necessary to use certain precautions.

When a zinc job is properly erected, it will last almost indefinitely. Zinc installations are on record which have lasted fifty years or longer.

A twenty-five-year life can safely be promised the customer, except in a few localities where the air is strongly acid from coal smoke or from smelter and blast furnace fumes.

The precautions needed with zinc spouting are three:

(1) Slip joint gutter and pipe connections of from 1 to 1½ inches are required, because zinc expands and contracts more than other metals.

(2) Zinc requires galvanized gutter hangers and pipe fasteners, all of which we can furnish. The purpose of these is to prevent the corrosion which would occur if the zinc were allowed to touch bare iron when wet.

(3) For the same reason, zinc must not be erected so as to touch bare copper or brass, or even galvanized sheet steel or iron. If used to repair a copper spouting job, asbestos cement must be used to separate the metals. Full directions covering this are given below.

It is perfectly easy to erect a zinc job so that the various lengths of gutter and pipe will have free play for expansion and contraction.

When these points are observed, the resulting job is entirely out of the class of galvanized spouting. It will last several times longer, and your customer will willingly pay a better price for both materials and erection.

By following carefully the instructions given in the following, you will be sure of turning out a

job satisfactory to your customer and a credit to yourself.

New Versus Repair Work.

Never patch a job of galvanized spouting with zinc. The galvanized material will be too short-lived to justify this, and when it begins to rust it will cause the zinc also to corrode. It is best to tear down an old galvanized job and replace throughout with zinc. Copper spouting is not open to the objection of short life and may be repaired with zinc *provided the copper and zinc do not touch each other*. They must be carefully separated, either by elastic oil roofing cement or by asphalt paint thickly applied. Unless this is done there will be immediate corrosion of the zinc wherever it touches copper when wet. Generally, it is better to repair copper with copper.

If the wall drives for rack fasteners are firmly embedded in mortar, or the hinged hooks are in good

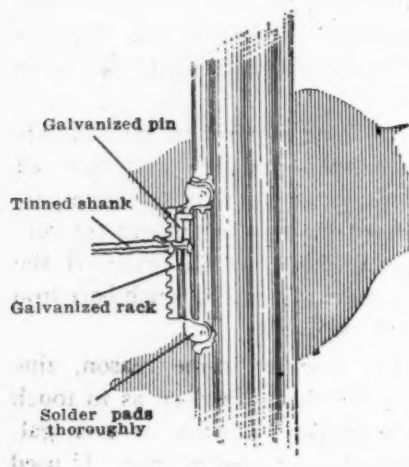


Figure 1. Best Method of Supporting Zinc Conductor Pipe. Use Galvanized Rack Type Fastener with Galvanized Pin and Tinned Wall Drive or Shank. One Fastener to Each Length of Pipe.

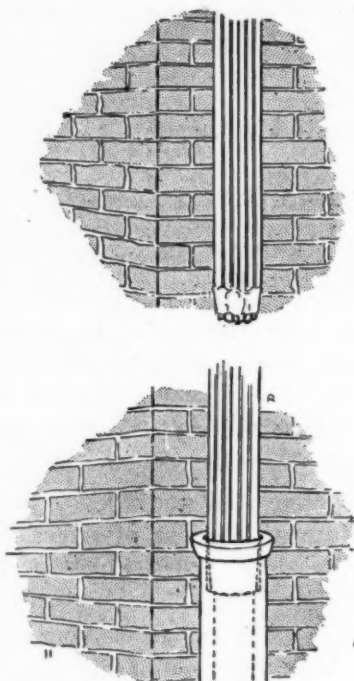
condition, they may be used again with zinc spouting, but only after having received two coats of rust-resisting paint. Gutter shanks that are in good condition may be used after being given two coats of paint; but the circles must be new and galvanized.

Detail Instructions.

The following instructions are prepared for you so that if carefully followed the result will be a sat-

isfactory job that should give lasting service to your customer.

There are, generally speaking, two types of roof construction:



Figures 2 and 3. Where Leader Pipe Discharges Into Cast Iron Soil Pipe, End of Leader Pipe Must Be Kept From Touching Soil Pipe. Use Electric Oil Roofing Cement or Portland Cement.

The flat roof covered with tin or composition roofing, such as is commonly found in cities where houses are built adjoining one another; and the pitched roof used in houses built singly.

Rack fasteners must be securely soldered to the pipe, not riveted. Each length of pipe must fit into the adjoining length at least 1 inch—snugly, yet not too tight to permit expansion. The pipe connections must NOT be soldered. See Figure 1.

Do not use the sickle hook or a cheap wire pipe fastener. They are not secure and are liable to cause corrosion of the zinc. We recommend corrugated pipe at all times to care for the expansion and contraction due to changing temperature. Longer life will be assured in zinc as it is in all other metals if the pipes are corrugated.

Figures 2 and 3 show the connection of the zinc conductor pipe with a cast iron soil pipe or sewer

connection. The zinc pipe must be bedded in elastic oil roofing cement or Portland cement to protect it against contact with the iron soil pipe.

The second type of roof construction, the pitched roof, is shown in Figure 4. The roof may be of tile, slate or shingle. The gutters are made of Pure Zinc with slip joints. These joints must not be driven up tight but must have $\frac{1}{8}$ -inch play in summer, $\frac{3}{8}$ -inch in winter, to care for the expansion and contraction. *The hangers are spaced every two feet* for proper support, and are to be of malleable iron with shanks *tinned* and circles heavily *galvanized*. End hangers should be not more than one foot from ends of gutters, in order to support the additional weight of mitters, end caps, etc.

Galvanized steel strap hangers are seldom well galvanized and should be avoided. If used, they must be given two coats of rust-resisting paint to protect them from corro-

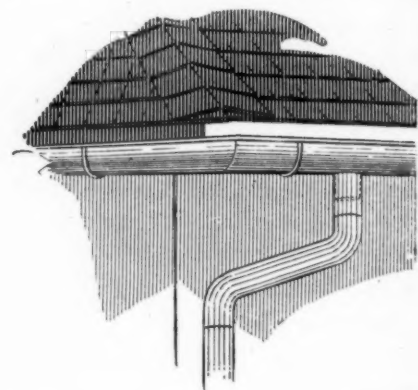


Figure 4. Zinc Eave Troughs Must Be Supported Every Two Feet by Galvanized Circles Attached to Tinned Shanks.

sion. Wire hangers are not suitable for this work and must never be used.

Any form of tinned shank can be used to meet the particular type of roof construction. See Figure 5 for detail of hanger and outlet.

The outlet should be made of zinc, also the end cap and miter. In most cases the hole for the outlet is cut in the gutter on the job. The outlet is inserted in the usual manner and soldered tight in the

regular way. (See instruction for soldering in the following.)

The zinc pipe is connected with the zinc outlet in the regular way *without soldering*. No roofing cement is necessary when zinc and zinc come in contact.

The pipe is fastened to the wall in the same manner as in the flat roof construction detailed above.

All gutter hangers, pipe fasteners, miters, etc., should be ordered especially in sufficient quantity to carry in stock as you do your pipe and trough. NEVER patch out a zinc job with another metal.

Figures 6 and 7 show another type of gutter frequently used—the ornamental box gutter made of wood and lined with tin. In this case the outlet is of tin. To erect the zinc pipe proceed as instructed for the flat roof construction, using elastic roofing cement on the outlet after giving the latter two coats of paint inside and outside.

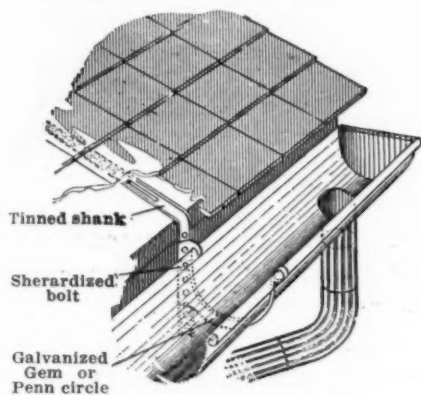


Figure 5. Use Only Galvanized Circles With Sherardized Bolts and Tinned Hangers. All Outlets, End Caps and Miters Must Be of Zinc.

Elbows—slip together as usual. Do not solder.

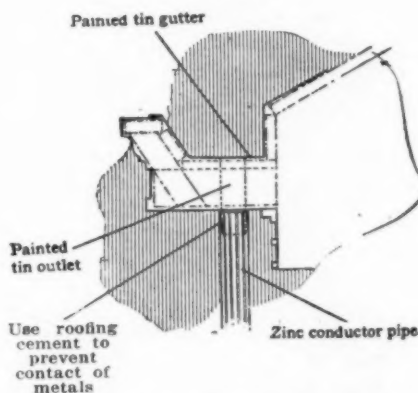
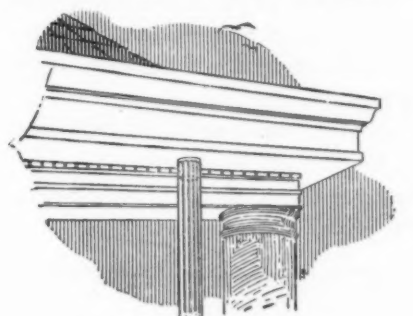
Soldering.

Use "killed acid" flux—muriatic acid which has dissolved all the zinc it will take.

Scrape or sandpaper surfaces clean. Use a heavy iron moderately hot (too much heat will render zinc brittle or will melt it). Cover as much surface as you can with solder in order to distribute the strain. This applies especially when soldering rack fasteners to pipe.

Painting.

To roughen zinc or galvanized iron for painting, first wash off any grease with gasoline or benzole, then swab surface with a solution of either copper sulphate or copper



Figures 6 and 7. Ornamental Box Corner Containing Tinned Gutter. The Tinned Gutter and Outlet Must Be Thoroughly Painted and Outlet Plastered With Elastic Oil Cement to Prevent Contact Between It and Zinc Conductor Pipe.

acetate. Use 8 ounces of sulphate of copper crystals, or 6 ounces of acetate of copper, to a gallon of water. Allow to dry, and brush off the resulting dust before painting.

Clean up the job when it is finished. Don't leave nails, pieces of metal or dirt lying in the gutters. Properly and carefully erected, zinc conductor pipe and gutter will be a success. Do your part!

Brier Hill Steel Company Will Enlarge Its Plant.

Immediate rebuilding of the Thomas plant of the Brier Hill Steel Company, at Niles, Ohio, was decided at a meeting of the directors held September 19th. The plans call for an expenditure of about \$1,000,000 and include a new steam mill drive, relocation of 12 sheet

mills and the building of new annealing furnaces and warehouses. The work is to be completed in about six months and will result in increasing the capacity of the plant within 25 to 30 per cent.

Announcement by the directors of further extensive plant expansion which will include the building of new mill units was deferred until after another meeting next Monday. At that time important details in connection with this proposal will be considered. It is understood the extensions being considered include strip mills, pipe furnaces and possibly tin plate mills.

Complete List of Officials of Indiana Sheet Metal Contractors.

In the list of officers and directors of the Indiana Sheet Metal Contractors' Association, published some time ago, the names of W. A. Brown, of Marion, and W. S. Waters, of Indianapolis, were omitted.

The complete list of officers and directors of the association follows:

President—Joseph C. Gardner, Indianapolis.

First Vice-president—A. W. Dudley, Terre Haute.

Second Vice-president—Charles Gatz, Gary.

Secretary—Leslie W. Beach, Richmond.

Treasurer—J. D. Ortmeyer, Evansville.

Directors—A. P. Schmidt, Evansville; C. R. Oberholtzer, Angola; W. A. Brown, Marion; W. S. Waters, Indianapolis; John C. Kreidt, Fort Wayne, and John Balkema, Lafayette.

Instead of Selling Your Waste Paper Burn It in Your Furnace.

Otis Minor, one of the progressive merchants at Lake Odessa, Michigan, suggests that merchants stop selling their waste paper and paste board, the price for which is very low and says that a ton of waste paper or paste boards is worth as much as a half ton of coal in most furnaces; besides it helps to keep the flues and chimney clean!

New Jersey Zinc Company Had Big Display at Chemical Show.

Among the exhibits at the recent Chemical Exposition in New York City, the exhibit of the New Jersey Zinc Company attracted much attention not only because of its size, but also because of the many varied products of its plants that were shown.

The part of the exhibit that was most interesting to our readers was naturally the sheet zinc products

large amounts of expensive alloys are used in heats of commercial size.

Such small heats can sometimes be made up at crucible-steel plants, but few crucible-steel makers care to undertake experimental heats for other firms.

Small electric furnaces offer some advantages over crucible furnaces for experimental work, and various types of such furnaces are being successfully used by different firms for such work.

Somewhat similar reports had been received as to the use of molybdenum steel.

The ingots made for the Navy were in two series, the first being rolled, heat-treated, and given physical tests by the Bureau of Standards.

The second series was made in larger ingots, which were rolled into plates, cut up into smaller plates, and heat-treated to different Brinell hardness numbers by the Hallcomb Steel Company.

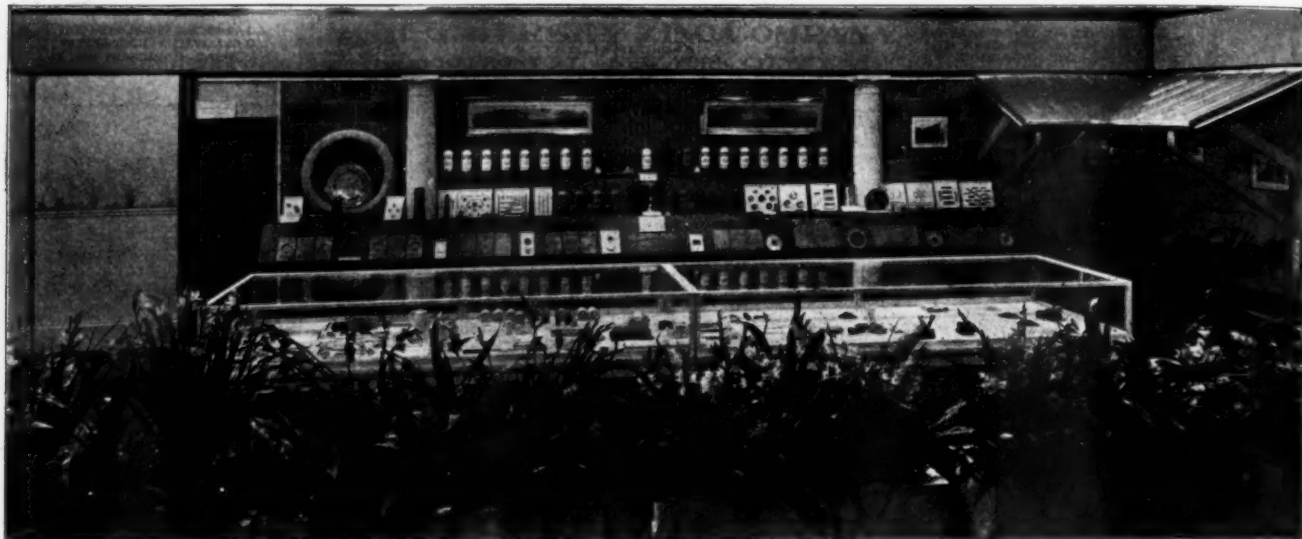


Exhibit of New Jersey Zinc Company's Products at Chemical Exposition in New York City.

which were displayed in a very effective manner in the right-hand corner.

There were standing seam roofing, gutters and conductor pipe of different designs—all of the well-known Horse Head brand—as well as pictures of residences and other buildings roofed with Horse Head zinc.

U. S. Bureau of Mines Makes Study of Alloy Steels.

The results of studies in the experimental production of certain alloy steels are given in Bulletin 199, by H. W. Gillett, chief alloy chemist and E. L. Mack, assistant alloy chemist, which has just been published by the United States Bureau of Mines.

The production of small heats of alloy steels on an experimental scale is often desirable in beginning the study of new alloy steels before

The bureau of Mines has recently made up experimental heats of alloy steels for the Army and the Navy.

The steels for the Army were desired for work on gun erosion, especially as regards the effect of nitrogen on the steel.

The request from the War Department for this experimental work was made during the course of the world war and followed the receipt of information from a creditable source that Germany was using uranium steel in the liners of some high-power naval guns.

It was stated that uranium stiffens steel at high temperatures, and raises the softening point some 200 degrees Centigrade, so that gun erosion is reduced.

The fact that the German guns retained accuracy of fire at the end was ascribed to the uranium-steel gun liners.

Physical tests of this series under several heat treatments are being made by the Navy.

Another series of alloy steels was made up in the course of co-operative work with the Vanadium Corporation of America and the Welsbach Company; various impact and endurance tests are being made on these steels, the results to be given in a later publication.

The present report deals only with the preparation of the ingots on any of the series of steels.

Some of the points brought out in preparing the steels, particularly as to the recovery of the alloying elements from the various ferro-alloys entering the steel, may be of interest and are, therefore, put on record at this time.

The indirect-arc furnace finally used seems also to be a sufficiently useful piece of experimental apparatus to justify its description.

Detailed information regarding tests made with uranium, silicon, manganese, molybdenum, chromium, vanadium, nickel, copper-nickel, aluminum, zirconium, cerium and boron as alloying agents are given in Bulletin 199, which may be obtained by addressing the Bureau of Mines, Washington, D. C.

Gasoline Brazier Fills Many Purposes in Sheet Metal Shop.

The Number 105 Gasoline Brazier, which is made by the Clayton and Lambert Manufacturing Company, Detroit, Michigan, is de-



Gasoline Brazier With Stand.

signed for heavy brazing, pre-heating surfaces and tempering, and for various kinds of work requiring intense heat, in the garage, radiator repair shop and sheet metal factory. The burner is fitted with a powerful generator that super-heats the gas, producing a perfect blue flame. It is swiveled, enabling the operator to point the flame in any direction desired and hold it there. The tank is of 10 gallon capacity with welded seams and galvanized inside and out. The Number 105 Brazier is operated under a working pressure of 75 pounds, produced by a powerful, compound, detachable brass pump. Compressed air can be used if desired, supplied from a pipe line.

Work for Your Town, While You Are Working for Yourself.

More towns die for want of public spirit than from any other cause.

When a man, searching for a business location or a home, goes into a town and finds it brimful of bustle and enthusiasm, and everybody working to build up the community as well as his own business, he pitches his tent and joins in the interest and the hustling. When, however, he goes into a town where everybody expresses doubt for the future prosperity of the place, where the people go dragging purposelessly and gloomily around, the seeker naturally hies himself away to a sunnier prospect. It is up to every individual to make a live growing town. When any person is working for the town, he is working for himself. Together they stand; divided they fall.

Notes and Queries

Copper Tubing.

From Tony Butkovich, Cottonwood Plumbing and Sheet Metal Works, Cottonwood, Arizona.

Kindly advise me where I can get copper tubing.

Ans.—Bridgeport Brass Company, 190 North State Street; Chase Metal Works, 7 South Dearborn Street; Charles H. Besly and Company, 118 North Clinton Street; Interstate Brass Company, 15 North Peoria Street; all of Chicago, Illinois, and U. T. Hungerford Brass and Copper Company, Battery and Market Streets, San Francisco, California.

Steel Spring for Clocks.

From J. J. Daugherty, 628 Main Street, Hamilton, Ohio.

Can you tell me who makes steel spring such as is used in clocks?

Ans.—American Steel and Wire Company, 208 South La Salle Street, Chicago, Illinois.

Lawn Mower Sharpening Machines.

From W. H. Christensen, Box 61, Laurel, Nebraska.

Please advise me where I can obtain machines for sharpening lawn mowers.

Ans.—The Whitaker Manufacturing Company, 409 South Green Street, Chicago, Illinois.

Charcoal Iron.

From Round Oak Heating Company, Le Mars, Iowa.

Can you tell me where I can secure some of the old fashioned

black charcoal iron that smokepipe used to be made of?

Ans.—Joseph T. Ryerson and Son, 2558 West 16th Street; and McVoy Sheet and Tin Plate Company, 344 West Austin Avenue; both of Chicago, Illinois.

Copper Tubing.

From a Subscriber.

Please advise me where I can get copper tubing in lengths from 13 to 20 feet, 20 gauge dead soft $\frac{1}{2}$ and $\frac{5}{8}$ inch inside diameter.

Ans.—Rome Brass and Copper Company, 117 North Market Street; and Interstate Brass Company, 15 North Peoria Street; both Chicago, Illinois.

Brazing Outfits.

From Tony Butkovich, Cottonwood Plumbing and Sheet Metal Works, Cottonwood, Arizona.

Who makes brazing outfits for gasolene?

Ans.—Ashton Manufacturing Company, Newark, New Jersey; Burgess Soldering Furnace Company, Columbus, Ohio; Double Blast Manufacturing Company, North Chicago, Illinois; Quick Meal Stove Company, Division American Stove Company, 825 Chouteau Avenue, St. Louis, Missouri; Clayton and Lambert Manufacturing Company, 10635 Knodell Avenue, Detroit, Michigan; Otto Bernz Company, Newark, New Jersey; Turner Brass Works, Sycamore, Illinois; Geo. W. Diener Manufacturing Company, 400 Monticello Avenue, Chicago, Illinois; and Buffalo Dental Manufacturing Company, Buffalo, New York.

Brass Fittings.

From Tony Butkovich, Cottonwood Plumbing and Sheet Metal Works, Cottonwood, Arizona.

Please let me know where I can get brass fittings.

Ans.—Bridgeport Brass Company, 190 North State Street, Chicago, Illinois; Waterbury Manufacturing Company, 7 South Dearborn Street, Chicago, Illinois; U. T. Hungerford Brass and Copper Company, Battery and Market Streets, San Francisco, California, and Wolff Manufacturing Corporation, Denver, Colorado.

Review of Conditions in the Metal Markets.

General Situation in the Steel Industry. Report of Prices and Tendencies in Sheet Metals, Pig Iron, etc.

NON-FERROUS METALS SHOW FIRMNESS.

The enactment of the tariff bill and conclusion of the serious strikes have been reflected in strong and active nonferrous metal markets.

Lead and zinc have been the market features, each advancing to a new high level since November, 1920. The tariff has been a factor in each case, but the strong statistical position of each metal and good consuming demand as well have been forcing prices upward. Copper business has been rather slow, but there has existed no inclination to make price concessions. Aluminum prices and antimony quotations have edged upward, on the tariff. Tin business has improved, with buying by tin plate makers broader than in some time.

Copper.

Copper has a slightly firmer tone. Lake is quoted at $14\frac{1}{4}$ cents a pound and electrolytic at 14 cents to $14\frac{1}{8}$ cents a pound. Important sales to foreign consumers, principally England, France and Germany were reported this week. Most of this buying was for delivery several months ahead. Figures given out by reliable sources as to recent deliveries into domestic and foreign consumption indicated an average for the three months ending with August of well over 160,000,000 pounds a month. In August total deliveries are believed to have exceeded 170,000,000 pounds, of which domestic consumers took almost 100,000,000 and the remainder going abroad. It must be conceded, if these figures are at all correct, the statistical position of copper is rapidly arriving at the point where an advance in price is inevitable. In fact, there is every reason to believe that copper will be selling at least a cent or two a pound higher than current quota-

tions by the end of the next three months.

Chicago warehouses quote sheet copper at $21\frac{1}{4}$ cents base.

Lead.

There continue to be many more buyers for lead than there are sellers but they are not bidding so excitedly and have not raised the limits that they are willing to pay. The best bid that has been made for Missouri lead is 6.30 cents East St. Louis and nothing higher than $6.62\frac{1}{2}$ cents has been paid for spot lead in New York, and in both instances only moderate sized tonnages were involved. Several producers who are out of the market have notified their customers that it is no use to make them bids at present but have promised to offer as soon as they have anything for sale.

According to advices from the west it is becoming increasingly difficult to get car supplies and the indications are that smelters will be unable to ship their full production during the next few weeks.

Chicago warehouse prices are as follows: American pig, 7.50 cents; bar, 8.25 cents; sheet lead, in full coils, 9.80 cents, and 10.05 in cut coils.

Zinc.

High grade zinc has been advanced $\frac{1}{4}$ cent to $7\frac{3}{4}$ cents delivered and producers report that they are doing a satisfactory business in this grade.

Sheet zinc is still being retained by two makers on an eight cent base which must be considerably less than the cost of production at the present price of high grade ore. It is necessary to go back nearly 20 years to find a time when the margin between slab and rolled zinc was as narrow as it is at present, while a year ago the margin was far above normal.

Chicago warehouses quote: Zinc

in slabs, 7.85 cents; sheet zinc, $10\frac{1}{4}$ cents in full casks and $10\frac{3}{4}$ cents in less than cask lots.

Nails and Wire.

Production of wire and nails in the Chicago district is improving slowly. Up to the present the improvement has not been sufficient to relieve congestion on mill books and inasmuch as buying continues at a heavy rate deliveries have not been helped materially. A slightly lessened demand is met at the moment, doubtless due to the fact users have orders on mill books on which deliveries have been delayed. The market is generally higher as the leading producer formerly quoting less than its competitors has withdrawn its quotations and is quoting \$2 per ton higher when it considers an inquiry.

This makes the market prices on wire products as follows: Plain manufacturers' and annealed wire, 2.45 cents; galvanized wire, 2.95 cents; wire nails, 2.70 cents; cement coated nails, 2.20 cents; painted barbed wire and polished staples, 2.85 cents; galvanized barbed wire and galvanized staples, 3.35 cents; standard spring wire, 3.25 cents, all Pittsburgh base, and wire fencing, 68 per cent off to dealers and 70% off to jobbers.

Bolts and Nuts.

In spite of quotations on bolts and nuts being considerably higher for fourth quarter than earlier in the year, consumers have bought freely for the remainder of the year. Under the circumstance of lower prices, practically every pound of material due on third quarter contracts has been specified. Producers now are operating on a better basis and have reached about 85 per cent of capacity. Demand for prompt material is good, although in small lots.

Tin Plate.

Demand for tin plate is sluggish, as it normally would be at this time of year. Consumers are buying only from hand to mouth, but such buying rolls up a moderate tonnage from week to week and on the whole the mills are not operating badly for this time of year, production in the industry as a whole being between 60 and 65 per cent. Independents are operating at 60 per cent or thereabouts, while the leading interest has run at fully 65 per cent in the past two weeks and seems to be scheduled at approximately that rate for some time to come.

There continues to be a great deal of discussion in the trade as to the future of prices. The \$4.75 price which has been the "regular" price for more than a year past is being quite rigidly observed, instead of being shaded as it was for so long, and the majority of producers are talking of the necessity of there being an advance. However, no producer has advanced his price and none seems willing to take the initiative in this matter. The leading interest does not seem to be in the reckoning in this matter, for apparently it has obligated itself for all the tin plate it will be in position to make in the near future, with sheet bars so scarce.

Sheets.

Independents are making fairly heavy sales from day to day in all grades of sheets. These sales are chiefly for early deliveries. Some small lots of galvanized and common black are going for shipment in two or three weeks, at the highest premiums, but the bulk of the independent business involves shipment in say four to six weeks. The leading interest reached its limit for taking on new obligations about a fortnight ago in either contracts or outright orders and its business now is confined to the entering of shipping orders against contracts. These have been coming in freely and there is now little contract tonnage left to be specified. Nominally the contracts are for fourth

quarter but even at full operation it would be impossible to complete shipments this year and about a month's business would hang over. Nothing like a full operation is to be expected, of course.

Blue annealed sheets are making a remarkable price record, as they are now bringing up to 2.85 cents, for the earliest delivery. There is a wide range of prices going in the open market, according to delivery. The leading interest's price is 2.50 cents, but it is sold out, and independent prices being 2.60 cents, for rather late delivery, running up by stages to 2.85 cents. The advance is quite a substantial one, for late in the old year and early in this year blue annealed sheets were decidedly easy at 2.25 cents.

Black sheets show a full range

of 3.35 cents to 3.75 cents, but 3.35 cents is practically nominal, being merely the official price of the leading interest, which is sold out. The bulk of the independent tonnage is going at 3.50 cents. The 3.75 cent price applies chiefly to small lots for very early shipment. While galvanized are quotable at the corresponding general range of 4.35 cents to 4.75 cents it is much easier to sell galvanized at 4.75 cents than black at 3.75 cents. In other words, while technically the spread between black and galvanized is 1.00 cent, in practice the difference in value is greater than that. With high wages in galvanizing departments, and zinc at over seven cents a much greater spread would be justifiable according to pre-war methods of reckoning.

Labor and Car Shortage Hampers Shipments of Pig Iron and Steel Products.

Inquiries Are Good With Indications That Buying Will Increase During Close of Year.

THE car shortage is acute and is greatly hampering shipments. Labor is lacking to load box cars and iron is being piled at most of the stacks in the Chicago district.

The market is strong at \$32 base furnace for Northern Number 2 Foundry. Inquiry for spot iron is good and for fourth quarter is coming out more freely leading to the expectation of increased buying over the remainder of the year. The melt continues steady and spot offerings are readily absorbed indicating the needs of consumers. An inquiry is current for 2000 to 3000 tons of foundry iron from the Chicago district for fourth quarter shipment. A sale of 250 tons of northern foundry has been made to a Michigan user to replace undelivered southern iron. Southern iron now is quoted at \$29.50 to \$31.50 Birmingham for No. 2 foundry. Few shipments are getting through from the South and the furnaces of that section are adverse to selling further. Lake Su-

perior charcoal iron is in good demand at \$33 furnace with prospects of an advance in the near future. Prompt shipments are being made from stock. A Michigan melter covered for 250 tons of charcoal for the fourth quarter.

In the Pittsburgh district, the common figure on Northern Number 2 foundry, 1.75 to 2.25 silicon, is \$35, valley, though one interest with a furnace recently resuming which sells only a portion of its output has been naming \$34. On the other hand figures as high as \$36 and \$37 have been quoted. Few new inquiries now are current. Demand for low phosphorus iron has fallen off somewhat although up to \$39, valley, still is being quoted on small lots.

Southern furnace interests are still selling pig iron largely for fourth quarter delivery. Spot prices are at \$28 to \$28.50 for Southern Number 2 foundry. Several large tonnages, ranging from 2000 to 10,000 tons, have been closed in the last two weeks. Pig

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

| | |
|---------------------|----------------|
| Chicago Foundry.. | \$32 00 |
| Southern Fdy. No. 2 | 34 00 to 36 00 |
| Lake Sup. Char-coal | 36.15 |
| Malleable | 32 00 |

FIRST QUALITY BRIGHT TIN PLATES.

| | Per Box |
|---------------------|---------|
| IC 14x20 112 sheets | \$10 00 |
| IX 14x20 | 11 25 |
| IXX 14x20 | 12 60 |
| IXXX 14x20 | 13 00 |
| XXXX 14x20 | 15 25 |
| IC 20x28 | 20 00 |
| IX 20x28 | 22 50 |
| IXX 20x28 | 25 20 |
| IXXX 20x28 | 27 50 |
| XXXX 20x28 | 30 50 |

COKE PLATES.

| | |
|---------------------|---------------|
| Cokes, 180 lbs... | 20x28 \$11 50 |
| Cokes, 200 lbs... | 20x28 12 00 |
| Cokes, 214 lbs...IC | 20x28 12 25 |
| Cokes, 270 lbs...IX | 20x28 14 10 |

BLUE ANNEALED SHEETS.

| | |
|------|---------------------|
| Base | per 100 lbs. \$4 00 |
|------|---------------------|

ONE PASS COLD ROLLED BLACK.

| | |
|-----------|---------------------|
| No. 18-20 | per 100 lbs. \$4.65 |
| No. 22-24 | per 100 lbs. 4.70 |
| No. 26 | per 100 lbs. 4.75 |
| No. 27 | per 100 lbs. 4.80 |
| No. 28 | per 100 lbs. 4.85 |
| No. 29 | per 100 lbs. 4.95 |

GALVANIZED.

| | |
|-----------|---------------------|
| No. 18 | per 100 lbs. \$5.10 |
| No. 18-20 | per 100 lbs. 5.25 |
| No. 22-24 | per 100 lbs. 5.40 |
| No. 26 | per 100 lbs. 5.55 |
| No. 27 | per 100 lbs. 5.70 |
| No. 28 | per 100 lbs. 5.85 |
| No. 30 | per 100 lbs. 6.35 |

BAR SOLDER.

| | |
|-------------------|----------------------|
| Warranted. 50-50 | per 100 lbs. \$22 25 |
| Commercial. 45-55 | per 100 lbs. 20 75 |
| Plumbers | per 100 lbs. 19 50 |

ZINC.

| | |
|----------|------|
| In Slabs | 7 85 |
|----------|------|

SHEET ZINC.

| | |
|---------------------|----------|
| Cask lots, stock | 10 1/2 c |
| Less than cask lots | 10 1/2 c |

COPPER.

| | |
|---------------------|----------|
| Copper Sheets, base | 21 1/2 c |
|---------------------|----------|

LEAD.

| | |
|--------------|------|
| American Pig | 7 50 |
| Bar | 8 25 |

Sheet.

| | |
|------------|--------------------|
| Full coils | per 100 lbs. 9 80 |
| Cut coils | per 100 lbs. 10 05 |

TIN.

| | |
|---------|-------------|
| Pig Tin | per lb. 36c |
| Bar Tin | 38 1/2 c |

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

| | |
|-------------------|-----|
| Coopers' Barton's | Net |
| White's | Net |

AMMUNITION.

| | |
|------------------------------|---------|
| Shells, Loaded, Peters. | |
| Loaded with Black Powder 18% | |
| Loaded with Smokeless Powder | 18% |
| Winchester. | |
| Smokeless Repeater | 20 & 4% |
| Grade | 20 & 4% |
| Smokeless Leader | 20 & 4% |
| Grade | 20 & 4% |
| Black Powder | 20 & 4% |
| U. M. C. | |
| Nitro Club | 20 & 4% |
| Arrow | 20 & 4% |
| New Club | 20 & 4% |

| | |
|---------------------------------|--|
| Gun Wads—per 1000. | |
| Winchester 7-8 gauge 10&7 1/2 % | |
| " 9-10 gauge 10&7 1/2 % | |
| " 11-28 gauge 10&7 1/2 % | |

ASBESTOS.

| | |
|--|-----------------|
| Paper up to 1/16 | 6c per lb. |
| Rollboard | 6 1/2 c per lb. |
| Millboard 3/32 to 1/4 | 6c per lb. |
| Corrugated Paper (250 sq. ft. to roll) | \$6.00 per roll |

AUGERS.

| | |
|---------------------------------------|------------------|
| Boring Machine | 40&10% |
| Carpenter's Nut | 50% |
| Hollow. | |
| Bonney's | per doz. \$30 00 |
| Post Hole. | |
| Iwan's Post Hole and Well | 30 and 5% |
| Vaughan's 4 to 5 in. with out handles | per doz. \$14 00 |

AWLS.

| | |
|-----------------------|-----------------|
| Brad. | |
| No. 3 Handled | per doz. \$0 65 |
| No. 1050 Handled | " 1 40 |
| Patent asst'd, 1 to 4 | " 35 |
| Harness. | |
| Common | per doz. \$1 05 |
| Patent | " 1 00 |
| Peg. | |
| Shouldered | " 1 60 |
| Patented | " 75 |
| Scratch. | |
| No. 18, Socket | |
| Handled | per doz. \$2 50 |
| No. 344 Goodell. | |
| Pratt, list less | 35-40% |
| No. 7 Stanley. | per doz. \$2 25 |

AXES.

| | |
|--|------------------|
| First Quality, Single Bitted (unhandled), 3 to 4 lb. | per doz. \$12 00 |
| Good Quality, Single Bitted, same weight, per doz. | 11 00 |

BALANCES, SPRING.

| | |
|--------------|---------------|
| Universal. | |
| Sight Spring | List less 25% |
| Straight | List less 25% |

BARBS, WRECKING.

| | |
|-----------------|--------|
| V. & B. No. 12 | \$0 34 |
| V. & B. No. 24 | 0 43 |
| V. & B. No. 324 | 0 57 |
| V. & B. No. 30 | 0 48 |
| V. & B. No. 330 | 0 63 |

BEVEL, TEE.

| | |
|-------------------------------------|------|
| Stanley's Rosewood handle, new list | Nets |
| Stanley iron handle | Nets |

BINDING CLOTH.

| | |
|---------------|-----|
| Zinc | 55% |
| Brass | 40% |
| Brass, plated | 60% |

BITS.

| | |
|-------------------|----------|
| Auger. | |
| Jennings Pattern | Net |
| Ford Car | 25% off |
| Ford's Ship | 25% off |
| Irwin | 35% |
| Russell Jennings | less 10% |
| Clark's Expansive | 33 1/2 % |
| Center | 10% |

Countersink.

| | |
|--------------------|------|
| American Snailhead | 1 75 |
| Rose | 2 00 |
| Flat | 1 40 |

Dowel.

| | |
|-----------------|----------|
| Russel Jennings | plus 20% |
|-----------------|----------|

Gimlet.

| | |
|---------------------------|---------------------|
| Standard Double Cut Gross | \$8 40 |
| Nail Metal Single Cut | Gross \$4 00—\$5 00 |

Reamer.

| | |
|------------------|-------------|
| Standard Square | Doz. \$2 50 |
| American Octagon | " 2 50 |

Screw Driver.

| | |
|----------------|----------|
| No. 1 Common | Each 18c |
| No. 26 Stanley | Each 70c |

BLADES, SAW.

| | |
|---------------|-----------------------|
| Wood. | |
| Atkins 30-in. | |
| Nos. | 6 40 26 |
| | \$3 90 \$3 45 \$5 40 |
| Diston 30-in. | |
| Nos. | 6 66 26 |
| | \$9 45 \$10 05 \$9 45 |

BLOCKS.

| | |
|--------|-----|
| Wooden | 20% |
| Patent | 20% |

BLOW TORCHES (See Firepots).

BOARDS.

| | |
|--------------------|-----------|
| Stove. | Per. Doz. |
| 26x26, wood lined | \$14 45 |
| 28x28, " " | 16 95 |
| 30x30, " " | 19 00 |
| 26x26, paper lined | 3 15 |
| 28x28, " " | 3 10 |
| 30x30, " " | 10 80 |

| | |
|--------------------------------|-----------------|
| Wash. | |
| No. 760, Banner Globe (single) | per doz. \$5 25 |
| No. 652, Banner Globe (single) | per doz. 675 |
| No. 801, Brass King, per doz. | 8 25 |
| No. 860, Single—Plain Pump | 6 25 |

BOLTS.

| | |
|---|--------|
| Carriage, Machine, etc. | |
| Carriage, cut thread, 1/2 x 6 and sizes smaller and shorter | 50% |
| Carriage sizes larger and longer than 1/2 x 6 | 40-5% |
| Machine, 1/4 x 4 and sizes smaller and shorter | 50-10% |
| Machine, sizes larger and longer than 1/4 x 4 | 50-5% |
| Stove | 75-10% |
| Mortise, Door. | |
| Gem, iron | 5% |
| Gem, bronze plated | 5% |
| Barrel. | |
| Cast | Net |
| Wrought | " |
| Wrought, bronzed | " |
| Flush. | |
| Wrought | Net |
| Spring. | |
| Wrought | " |
| Wrought, heavy | " |
| Square. | |
| Wrought | " |

BOXES.

| | |
|-----------------------|-------------------------|
| Mall. No. 2 | 4 10 |
| Per doz. | \$18 00 \$23 00 \$29 00 |
| Cast Iron. | Per doz. \$9 50 |
| Mitra. | |
| Stanley's | Net Prices |
| Stearns, No. 2 | per doz. \$48 00 |
| Goodell-Fratt No. 408 | \$4 60 |
| " No. 410 | 4 80 |
| " No. 412 | 5 00 |
| V. & B. No. 444 8 in. | 4 65 |
| V. & B. No. 333 8 in. | 4 30 |
| V. & B. No. 222 8 in. | 4 00 |
| V. & B. No. 111 8 in. | 3 50 |
| V. & B. No. 11 8 in. | 3 05 |

BURRS, RIVETING.

| | |
|--------------------------|-------|
| Copper Burrs only | 40-5% |
| Tinners' Iron Burrs only | Net |

BUTTS.

| | |
|--|------------------------|
| Steel, antique copper or dull brass finish—case lots | |
| 3 1/2 x 3 1/2 | per dozen pairs \$2 75 |
| 4 x 4 | 3 80 |
| Heavy Bevel steel inside sets, case lots— | |
| per dozen sets | 7 50 |
| Steel bit keyed front door sets, each | 1 80 |
| Wrought brass bit keyed front door sets, each | 3 25 |
| Cylinder front door sets, each | 7 00 |

CALIPERS.

| | |
|--------------------|-----|
| Double | Net |
| Inside and Outside | " |
| Wing | " |

CARRIERS.

| | |
|------------------|------------|
| Hay. | |
| Diamond, Regular | each, nets |
| Diamond, Sling | " " |

CASTERS.

| | |
|-------------------------------------|----------|
| Standard—Ball Bearing. | 50 & 15% |
| Bed | 40% |
| Common Plate. | |
| Brass Wheel | 15% |
| Iron and porcelain wheels, new list | 50% |
| Philadelphia Plate, new list | 50% |
| Martin's | 40% |

CATCHERS, GRASS.

| | |
|----------|------------------|
| No. 1608 | per doz. \$12 25 |
| No. 1658 | " 14 01 |

CEMENT, FURNACE.

| | |
|--------------------------------|--------|
| American Seal, 5 lb. cans, net | \$0 45 |
| " 10 lb. cans, | 30 |
| " 25 lb. cans, | 1 37 |
| Asbestos, 5 lb. cans | 45 |
| Pecora, 5 lb. cans | 45 |
| " 10 lb. cans | 80 |
| " 25 lb. cans | 1 37 |

CHAINS.

| | |
|-------------------|-----------------------|
| Breast Chains. | |
| With Slide | per doz. pairs \$5 50 |
| Without Slide | " 5 00 |
| Doublestack | " 9 35 |
| With Covert Snaps | " 6 33 |

| | |
|------------------------------|------------|
| Picture Chains. | |
| Light brass, 3 ft., per doz. | 1 25 |
| Heavy brass, 3 ft. | 1 75 |
| Sash Chain. | (Morton's) |
| Steel, per 100 ft. | |
| 0 | \$2 50 |
| 1 | 2 10 |
| 2 | 3 60 |

| | |
|-----------------------------|--------|
| Champion Metal. | |
| OR | 5 40 |
| 2R | 5 60 |
| 1R | 7 75 |
| Champion Metal—Extra Heavy. | |
| 1H | \$9 50 |

| | |
|--------------------|-------------------|
| Cable Sash Chains. | |
| Steel | List Net Plus 15% |

CHALK, CARPENTERS.

| | |
|---------------------|-----------------|
| Blue | per gro. \$2 00 |
| Red | " 2 00 |
| White | " 1 50 |
| Common White School | " 0 30 |
| Crayon | " 0 30 |

CHIMNEY TOPS.

| | |
|---------|----------------|
| In bags | per bag \$1 80 |
|---------|----------------|

CHECK, DOOR.

| | |
|---------|----------|
| Corbin | Net list |
| Russwin | Net list |

CHISELS.

| | |
|-------------------------------|--------|
| Cold. | |
| V. & B. No. 25, 1/4 in., each | \$0 26 |
| V. & B. No. 25, 1/2 in., each | 41 |
| Diamond Point. | |
| V. & B. No. 15, 1/4 in. | 0 31 |
| V. & B. No. 15, 1/2 in. | 0 48 |
| Firmer Bevelled. | |
| Round Nose. | |
| V. & B. No. 65, 1/4 in. | 0 21 |
| V. & B. No. 65, 1/2 in. | 0 40 |
| Socket Firmer. | |
| Cape. | |
| V. & B. No. 50, 1/4 in. | 0 31 |
| V. & B. No. 50, 1/2 in. | 0 57 |

CHUCKS, DRILL.

| | |
|--|------------------|
| Goodell's, for Goodell's Screw Drivers | List less 35-40% |
| Yankee, for Yankee Screw Drivers | \$6 00 |

CHURNS.

| | |
|-----------------|--------------------|
| Anti-Bent Wood. | |
| Gal. | 5 7 10 |
| Each | \$3 00 \$4 60 4 35 |
| Belle, Barrell. | 65 & 7 1/2 % |
| Common Dash. | |
| Gal. | 5 7 |
| Per doz. | \$17 00 19 00 |

CLAMPS.

| | |
|-------------------|----------------|
| Adjustable. | |
| Martin's | 30% |
| No. 63, Screw | 20% |
| Cabinet. | |
| Screw | 20% |
| Carpenters'. | |
| Carriage Makers'. | |
| 3 1/2-inch | per doz \$7 00 |
| 5 - " " | 14 00 |
| 8 - " " | 25 00 |
| 12 - " " | 43 00 |

| | |
|-----------------------------------|--------|
| Hose. | |
| Sherman's brass, 1/4-inch | |
| per doz. | \$0 48 |
| Double, brass, 1/4-inch, per doz. | 1 20 |

| | |
|---------------------|--|
| Saw Filers. | |
| Wentworth's, No. 1. | \$12.50; No. 2, \$18.25; No. 3, \$16.25. |

CLAWS, TACK.

| | |
|-------------------------|-----------------|
| Wood hdl. No. 10 | per doz. \$1 15 |
| Forged steel, wood hdl. | " 2 15 |
| Solid steel | " 2 25 |
| Giant | 50 |

| | | | | | | | |
|---------------------------------|------------------------|-----------------------------------|------------------------|------------------------------|----------------------|---------------------------------------|-----------------------|
| CLEAVISES. | | ELBOWS—Stove Pipe. | | HAMMERS, HANDLED. | | HOOKS. | |
| Malleable | 10c lb. | 1-piece Corrugated, Uniform | Doz. | Blacksmiths', Hand, No. 6 | Each, net | Awning, No. 60..... | Net |
| CLIPPERS. | | 5-inch | \$1 28 | 26-oz. | 87 | Belt. | |
| Bolt (Carroll). | | 6-inch | 1 54 | Engineers', No. 1, 26-oz. | 87 | Brown's | 70&5% |
| No. 6 | \$2 50 | 7-inch | 1 98 | Farriers', No. 7, 26-oz. | 97 | Jones' | 65&5% |
| No. 1 | 2 25 | Special Corrugated. | | Machinists', No. 1, 7-oz. | 67 | Box. | |
| No. 3 | 4 25 | 6-inch | Doz. | Nail. | | No. | 3 10 12 |
| CLIPS. | | 7-inch | \$1 27 | Vanadium, No. 41, 20-oz. | 1 46 | Each | 30 39 0 77 0 36 |
| Axle | 65&5% | Uniform, Collar Adjustable | | Vanadium No. 41½, 16-oz. | 1 46 | Bush. | |
| Damper. | | 5-inch | Doz. | each | 1 46 | Common Axe Handle. | |
| Acme, with tail pieces, | | 6-inch | \$1 76 | V. & B., No. 11½, 16-oz. | 1 04 | per doz. | \$20 00 |
| per doz. | \$1 25 | 7-inch | 2 48 | Garden City, No. 11½, 16 | 77 | Chain. | |
| Non Rivet tail pieces, | | FACES, WOOD—50% off list. | | oz., each | 72 | Inch. ¼ ¼ 5/16 7/16 ¾ | |
| per doz. | 25 | FENCING. | | Tinner's Riveting, No. 1, 8 | 72 | Pr. 100 \$7 60 \$ 10 5 75 11 50 12 00 | |
| Non Rivet Clips. | 90 | Lawn fence, single space, | \$ 9 12 | Shoe, Steel, No. 1, 15 oz. | 65 | Clothes Line. | |
| Ham | 500 | 42-inch | 10 20 | each | | Japanned, per doz. | 350—1 00 |
| COLLARS, STOVE PIPE. | | Lawn fence, double space, | 12 50 | Tack. | | Galvanized | 650—2 25 |
| Lacquered. | | 42-inch | 12 75 | No. 5, each | 72 | Conductor. | |
| Inches. | 5 6 7 | Field fence, 26-inch, No. 10 | 26 50 | HAMMERS, HEAVY. | | Conductor hooks | 30-10% |
| Fancy pattern, | | Same, 6 filling. | 33 32 | Farriers'. | 20% | Milcor | Net |
| per doz. | 65c 75c \$4 00 | Field fence, 32-inch, No. 10 | 30 34 | Mason's. | | Corn. | |
| COMPASSES. | | Same, 6 filling. | 39 41 | Single and Double Face. | 50% | Common, riveted, red, per dz. | Net |
| Carpenters. | 15% | FILES AND RASPS. | | HANDLES. | | Little Giant. | |
| COPPERS—Soldering. | | Heller's (American) | 65-5% | Agricultural Tool. | | Grass. | |
| Painted Roofing. | | American | 65-5% | 4½-inch, plain. | per doz. \$3 50 | Common Nos. 1 3 5 7 | |
| 1 lb. and heavier. | per lb. 40c | Arce | 60 & 10% | Common Assorted, per doz. | \$0 75 | Per doz. | \$4 25 3 25 2 40 2 50 |
| 2½ lb. | 45c | Black Diamond | 50-5% | Pratt's Adjustable, Nos. | | Hammer. | |
| 3 lb. | 48c | Eagle | 60-10% | 1 & 2, per doz. | 6 00 | With plate. | per doz. \$1 00 |
| 1½ lb. | 55c | Great Western | 60 & 10% | Ives' Adjustable. | per set 1 25 | With screw. | 95 |
| 1 lb. | 60c | Kearney & Foot | 60 & 10% | Axe. | | Picture | 50%&50%&10% |
| CORD. | | McClellan | 60 & 10% | Hickory, No. 1. | per doz. 3 00 | Potato and Manure. | Net |
| Picture. | | Nicholson | 60-10% | Hickory, No. 2. | 2 00 | HOSE. | |
| White Wire. | 60 & 5% | Simonds | 60% | 1st quality, second growth | 6 00 | ¾-inch molded reel | 15% |
| Spot No. 7. | per lb. 65c | J. Barton Smith | 60-10-5% | Special white, 2nd growth | 4 50 | ¾-inch 3 ply duck. | 15% |
| Common, No. 7. | 40c | X F | Net List | Chisel. | | ¾-inch 4 ply duck. | 15% |
| COTTERS, SPRING. | | FIRE POTS. | | Hickory, Tanged, Firmer | | ¾-inch 5 ply multiple. | 10% |
| All sizes | 87½% | Clayton & Lambert's— | | Assorted | per doz. 55c | IRONS. | |
| COUPLINGS, HOSE | | East of west boundary line of | | Hickory, Socket Firmer. | | Sad. | |
| Brass | per doz. \$2 25 | Province of Manitoba, Canada, | | Assorted | per doz. 70c | Charcoal | per doz. \$11 00 |
| CUT-OFFS | | No. Dakota, So. Dakota, Ne- | | Coal Pick | 40% | Common, polished, per | |
| Standard gauge. | 35% | braska, Kansas, Oklahoma, | | Drifting Pick | 40% | 100 lbs. | 7 75 |
| 26 gauge. | 30% | Amarillo, San Angelo and La- | | File, assorted | per doz. 30c | No. 70 Asbestos. | \$1 50 net |
| CUTTERS. | | redo, Texas. | 55% | Hammer and Hatchet. | | No. 100 | 1 75 net |
| Glass. | | West of above boundary | 52% | No. 1, per doz. | \$0 80 | Common, nickel plated. | 2 25 |
| Red Devil. | Net | line | | Second growth hickory, per | 1 20 | Mrs. Pott's | |
| MEAT. | | Turner Brass Works— | | Hay and Manure Fork, Han- | | No. 50 J. Enterprise, per set | Net |
| Enterprise—Nos. 5 10 12 | | No. 43 Kerosene-Gasoline | | dies, Strap and Ferrule. | per doz. \$7 00 | No. 55 J. | |
| Each | \$2 50 \$4 25 \$3 75 | Master Torch, 1 qt. | \$5 40 | Screw Driver. | | No. 50 T. | |
| Nos. 22 32 | | No. 43 Kerosene-Gasoline | | Assorted | each 6c | No. 55 T. | |
| Each | \$6 50 \$8 50 | Master Torch, 1 qt. | 6 73 | Shovel and Spade. | Net | JACKS. | |
| PIPE. | | No. 35 Double Jet Torch, | 6 95 | HANGERS. | | Richard's No. 1. | per doz. \$15 50 |
| Saunders', Nos. 1 2 3 | | Gasoline, 1 qt. | 6 95 | Door. | | Oliver. | |
| Each | \$1 85 2 75 6 75 | No. 39 Kerosene-Gasoline | | Matchless | Net | Each | \$0 60 \$0 30 |
| SLAW AND KRAUT. | | Torch, 1 qt. (new line). | 6 43 | Reliable | Net | Nos. | 0 08 |
| 4-knife Kraut. | per doz. \$20 00-55 00 | No. 33 Single Jet Gasoline | 6 93 | Richards | 25% | Standard. | |
| 3-knife Kraut. | | Torch, 1 qt. | 6 93 | Garage Door. | | Each | \$0 60 \$1 00 |
| 8x27 in. | 13 00-18 00 | Plumbers' Furnaces. | | (See Garage Door Hdw.) | | Nos. | 1 3 |
| 1-knife Slaw. | 2 50 | No. 53 Galv. Iron Tank | 6 75 | Conductor Pipe. | | Big Lift | 40% |
| 3-knife Slaw. | 3 00 | with Bulb, 7 pts. | 7 47 | Iwan's Perfection. | 50% | Tiger | 40% |
| Washer | 11 00 | No. 63 Galv. Iron Tank | 7 47 | Milcor Perfection. | Net | KETTLES. | |
| DAMPERS, STOVE PIPE. | | with Pump, 7 pts. | 8 22 | Eaves Trough. | | Brass | 15% |
| Diamond. | | No. 56 Straight Side Steel | 8 22 | Steel hangers | 30% | Cauldron | 40&5% |
| 6-inch | per doz. \$1 50 | Tank with Bulb, 7 pts. | 8 22 | Triple twist wire. | 10% | Copper | per lb. \$7 |
| DIGGERS. | | No. 66 Straight Side Steel | 9 54 | Milcor Eclipse | Net | Maslin | 40&2% |
| Post Hole. | | Tank, with Pump, 7 pts. | 9 54 | Milcor Triplex | Net | Sugar | 20% |
| Iwan's Split Handle | | GALVANIZED WARE | | Milcor Milwaukee | Net | KNIVES. | |
| (Eureka) | | Pails (Competition), 8-qt. | 1 85 | HATCHETS. | | Beet Topping. | |
| 4-ft. Handle. | per doz. 15 00 | 10-qt. | 2 00 | Size No. 2 extra quality | Per doz. | Clyde, 9-in. Scimitar Blade, | |
| 7-ft. Handle. | per doz. 30 00 | 12-qt. | 2 25 | broad | \$16 00 | doz. | 25% |
| Iwan's Hercules pattern, | | 14-qt. | 2 50 | Competitive Grade | 12 00 | California | 25% |
| per doz. | 18 00 | Wash tubs, No. 1. | 5 85 | No. 2 Warranted Shingling | 12 00 | Butcher. | |
| Dividers, Wing | 35% | No. 2 | 7 00 | Competitive Forged | 8 00 | Beechwood Handles, 6-inch | |
| DRILLS. | | No. 3 | 7 75 | HAY RACK BRACKETS | | blade | 35% |
| Bench. | | GAUGE. | | Wenzleman's No. 1 | | Beechwood Handles, 7-inch | |
| Blacksmiths' Twist (New | | Marking, Mortise, etc. | Nets | per doz. sets \$18 00 | | blade | 35% |
| List) | 40% | Wire. | 25% | Wenzleman's No. 2 | | Beechwood Handles, 3-inch | |
| BREAST. | | Discount | 65% and 10% | per doz. sets 19 20 | | blade | 35% |
| Millers Falls No. 12, per | | GLASS. | | HINGES. | | Cooper's Hoop | 25% |
| doz. | \$45 50 | Single Strength, A and B. | 85% | Blind. | | Drawing. | |
| Millers Falls No. 112, per | | Double Strength, A and B. | 85% | Clark's Gravity | | Standard | 25% |
| doz. | \$2 00 | all sizes | 85% | No. 1. | per set 45c | Adjustable | 25% |
| Hand. | | GLUE. | | No. 2. | 88c | Barton's Carpenters' | 25% |
| Goodell's Automatic. | | Bulk. | | Gate. | | Hay. | |
| No. 01. | each \$1 60 | B Amber | per lb. 35c | Clarks. | 1 2 3 | Iwan's Solid Socket. | 25% |
| No. 03. | 2 00 | A white | 40c | Hgs. & Litch, ea. 85c | 1 10 2 40 | Heath's | 25% |
| Goodell-Pratt No. 4½ | 3 00 | H. S. Amber | 32c | Hinges only— | | Iwan's Sickle Edge. | 25% |
| Goodell-Pratt No. 379. | 4 00 | Liquid. | | Upper | \$1 25 | Iwan's Imp'd Serrated. | 25% |
| Reciprocating. | | Army & Navy. | 40% | Lower | 1 55 | Hedge. | |
| Goodell's | 3 20 | Le Page's— | | Latches only— | | Challenge | 25% |
| DRIVERS, SCREW. | | List "A" | 37½% | No. 1. | each 28c | Diaston's No. 1. | 25% |
| Standard | Nets | List "B" | 35% | No. 2. | 28c | Putty. | |
| EAVES TROUGH. | | List "C" | 25% | Screen Door. | | Common | 25% |
| 79% of Standard List. | | GREASE, AXLE. | | 1751-2x3 | doz. \$2 00 | Lander's | 25% |
| Milcor | Net | Wood Boxes. | | 1753-2½x3½ | 1 95 | Scrapping. | |
| ELBOWS—Conductor Pipe. | | Frazer's | per gro. \$13 00 | Spring. | | Beech Handle | 25% |
| Galvanized Steel, Tin and Terne | | Hub Lightning. | 7 50 | Chicago | Add 10% to list | Lander's | 25% |
| Plain Round or Round Corrugated | | Wood Pails. | | Gem | 25% | KNOBS. | |
| 2 to 6 inch, Std. gauge | 65% | Frazer's, 15 lb. \$1.00; 25 lb. | | Matchless | 40% | Mineral | per doz. \$2 00 |
| 2 to 6 inch, 26 gauge | 45% | \$1.50 each. | | New Idea | per gross \$6 90 | Porcelain | 2 00 |
| 2 to 6 inch, 24 gauge | 20% | Hub Lightning, 15 lb. 90c; 25 | | Wrought Iron. | | Jet | 2 00 |
| Milcor | Net | lb. \$1.21 each. | | Per 100 pairs with screws: | | LADDERS. | |
| Square Corrugated. | | HAFTS, AWL. | | Light Strap Hinges, No. 3 | \$12 00 | Step. | |
| Standard gauge | 50% | Brad. | Common per doz. \$0 35 | Heavy Strap Hinges, No. 4 | 15 75 | Common, per ft. | 25c |
| 26 Gauge | 30% | Patent, plain top | 80 | Light T Hinges, No. 3 | 12 10 | Common, with Shelf, add 10c | |
| Milcor | Net | Patent, leather top | 80 | Heavy T Hinges, No. 4 | 20 00 | IXL | 24c |
| Portico Elbows. | | Sewing. | 24 | Extra Heavy T Hinges. | | Challenge, 6 to 9 ft. | 55c |
| Standard Gauge Conductor Pipe, | | Common | 24 | Screw Hook and Strap. | | 10 to 16 ft. | 60c |
| plain or corrugated. | | Patent | 55 | 6 to 12 in. | per 100 lbs. \$7 75 | LANTERNS. | |
| Not Nested | 70&5% | SEWING. | | 14 to 20 in. | 7 50 | Monarch tin, hot blast | \$ 25 |
| Nested solid | 70&5% | Common | 24 | 22 to 26 in. | 7 25 | Diets No. 2 cold blast | 13 00 |
| ELBOWS—Conductor Pipe. | | Patent | 55 | Screw Hook and Eye. | | Best tubular | 8 25 |
| Standard Gauge Conductor Pipe, | | SEWING. | | ¼ in. | per doz. pair \$2 00 | Competition lanterns No. 6 | |
| plain or corrugated. | | Common | 24 | ½ in. | 3 50 | tubular | 8 55 |
| Not Nested | 70&5% | Patent | 55 | ¾ in. | 5 00 | LEATHER, LACE. | |
| Nested solid | 70&5% | SEWING. | | HOES. | | Rawhide ¼-inch | 100 ft. \$2 00 |
| ELBOWS—Conductor Pipe. | | Common | 24 | HOES. | | ¾-inch | 4 00 |
| Standard Gauge Conductor Pipe, | | Patent | 55 | HOES. | | LEATHERS, PUMP. | |
| plain or corrugated. | | SEWING. | | HOES. | | Valve and Plunger. | Net |
| Not Nested | 70&5% | Common | 24 | HOES. | | LEATHERS, PUMP. | |
| Nested solid | 70&5% | Patent | 55 | HOES. | | LEATHERS, PUMP. | |

| LEVELS. | |
|---------------------------|---------|
| Disston, No. 12 Asst..... | \$22 05 |
| " No. 12, 30 in. each | 1 22 |
| " No. 22, 24 in. each | 2 40 |
| " Shafting, 6 in..... | 19 80 |
| " 6 in. gr. glass | 34 20 |
| " No. 1 Asst..... | 5 75 |
| " No. 9 Asst..... | 12 40 |
| " 24-30 in. each | 1 02 |
| " 30-36 in. each | 1 00 |

| LIFTERS. | |
|------------------|-----------------|
| Steve Cover..... | per gro. \$4 00 |
| Coppered..... | 4 75 |
| Alaska..... | 4 75 |
| Transom..... | 55% |
| Payson's..... | 55% |

| LINES. | |
|---------------------|-------------|
| Jute..... | per lb. 25c |
| Sisal..... | " 25c |
| Cotton..... | " 25c |
| Braided Cotton..... | " 52c |

| LINING, STOVE. | |
|----------------|---------------|
| Bricks..... | per crate 42c |

| LOCKS. | |
|---------------------|------------------|
| Barn Door..... | |
| No. 60 Stearns..... | per doz. \$12 00 |
| No. 80..... | 24 00 |

| MACHINES. | |
|----------------------------|------------------|
| Reveting..... | |
| Stearns No. 1..... | per doz. \$16 00 |
| Tomoning..... | |
| No. 50 Peace's Spoke, each | \$16 00 |

| MALLET. | |
|----------------------------|-------------|
| Carpenters..... | |
| Fibre Head, No. 2 per doz. | \$16 50 |
| " No. 3..... | 19 50 |
| " No. 4..... | 28 50 |
| Round Hickory..... | |
|per doz. | \$3 00—5 00 |

| TINNERS. | |
|--------------|-----------------|
| Hickory..... | per doz. \$3 25 |

| MATS. | |
|--------------------------|---------|
| Door..... | |
| National Rigid..... | 5&10&5% |
| Acme Steel Flexible..... | 50% |

| MEASUREMENTS. | |
|----------------------|------|
| Galvanized, doz..... | Nets |
| Japaned, doz..... | Nets |

| MITRES. | |
|---|-----|
| Galvanized steel mitres, and caps, end pieces, outlets..... | 30% |
| Milcor..... | Net |

| MOPS. | |
|--------------------------------|-------|
| Cotton, Star (Cut Ends)..... | |
| Pounds 12, 15, 18, 24, 3-oz. | |
| Per doz. \$4 00 4 35 5 50 7 00 | |
| Enterprise..... | 16% |
| Parker..... | 50&5% |

| NAILS. | |
|--------------------|--------|
| Cut Steel..... | \$4 60 |
| Cut Iron..... | 4 60 |
| Wire..... | |
| Common..... | 3 30 |
| Cement Coated..... | |
| Small Lots..... | 2 80 |

| HORSEHOES. | |
|---------------|-------|
| Ausable..... | 55&5% |
| Capewell..... | 15% |
| Perfect..... | 55&5% |
| Patnam..... | 30&5% |
| Star..... | 30&5% |

| PICTURE. | |
|------------------|---------------|
| Brass Heads..... | 25% |
| Brads..... | 70% |
| Furniture..... | List plus 15% |

| NETTING, POULTRY. | |
|--------------------------------|-----|
| Galvanized before weaving..... | 50% |
| Galvanized after weaving..... | 40% |

| NIPPERS. | |
|-----------------------------|---------------|
| End Cutting..... | |
| Berg's (Swedish) In. 5..... | 6 |
| Per dozen..... | \$12 60 15 20 |

| End and Diagonal Cutting. | |
|-----------------------------|---------------|
| Berg's (Swedish) In. 5..... | 6 |
| Per dozen..... | \$10 05 13 00 |

| Hoof. | |
|----------------------------|--------|
| Heller's..... | 40&10% |
| V. & B., No. 52, each..... | \$2 25 |

| NOZZLES. | |
|--------------|-----------------|
| Hose..... | |
| Magic..... | per doz. \$9 50 |
| Diamond..... | 8 75 |

| OILERS. | |
|-----------------------|-----|
| Chase Pattern..... | |
| Brass and Copper..... | 10% |
| Zinc..... | 30% |

| Railroad. | |
|--------------------|----------|
| Coppered..... | 33% |
| Steel..... | |
| Copper Plated..... | 50-10-5% |

| OPENERS. | |
|-----------------|-----------------|
| Can..... | |
| Delmonico..... | per doz. \$1 30 |
| Never Slip..... | 45 |

| Crates. | |
|-------------|-----------------------|
| V. & B..... | per doz. \$7 25-11 00 |

| FAILS. | |
|---------------------------|-----------------|
| Cream..... | |
| 14-qt. without gauge..... | per doz. \$9 50 |
| 18-qt. without gauge..... | per doz. 11 00 |
| 20-qt. without gauge..... | per doz. 11 75 |

| Sap. | |
|---------------------|-----------------|
| 10-qt., IC Tin..... | per doz. \$4 00 |
| 12..... | 5 50 |

| Stock. | |
|-----------------------------------|--|
| Galv. qts. 14 16 18 20 | |
| Per doz. \$9 75 10 75 12 75 14 50 | |

| Water. | |
|--------------------------|------------------|
| Galvanized qts. 10 12 14 | |
| Per doz..... | \$5 75 6 50 7 25 |

| Wood. | |
|---------------------------|---------------|
| Cable, 2-Hoop..... | per doz. Nets |
| Cable, 3-Hoop..... | " Nets |
| Cedar, 3-Hoop, brass..... | " Nets |

| FANS. | |
|---------------|------|
| Dripping..... | Net |
| Fry..... | |
| Common..... | Nets |
| Acme..... | " |

| Roasting. | |
|----------------------|-----------------|
| Paxton..... | |
| No. 1..... | 1 3 3 4 |
| Per doz..... | Nets |
| Neverburn..... | |
| Savory, No. 200..... | per doz. \$8 40 |

| PAPER. | |
|-------------------|------------|
| Roofing..... | Per square |
| Mayor, 1-ply..... | \$1 33 |
| " 2-ply..... | 2 24 |
| " 3-ply..... | 2 65 |

| Red Rosin. | |
|------------|------------------|
| | per ton \$111 45 |

| Sand and Emery. | |
|-------------------------------------|--------|
| No. 1 per ream, best grade..... | \$5 40 |
| No. 1, per ream, cheaper grade..... | 4 35 |

| Potato. | |
|---|------|
| Goodell's Saratoga, 10 1/2 in. doz..... | 6 50 |
| Goodell's Saratoga, 5 in. doz..... | 5 50 |

| PICKS. | |
|------------------------------|---------|
| Adze Eye Ore..... | 22 1/2% |
| Drifting and Poll Picks..... | 22 1/2% |
| Plumbers, Railroad..... | 22 1/2% |
| Surface..... | 22 1/2% |

| PINCERS. | |
|------------------------------|---------------|
| Carpenters', cast steel..... | |
| No. | 8 5 10 12 |
| Each \$0 55 0 75 0 95 \$1 03 | |
| Blacksmiths', No. 10..... | \$0 94 |
| Heller's..... | List plus 10% |

| PINS. | |
|---------------------------|--------|
| Clothes..... | |
| Common, per box of 5 gro. | \$0 95 |

| Picket. | |
|--------------------|-----------------|
| Fluted, 15-in..... | per doz. \$1 10 |
| Fluted, 21-in..... | 1 60 |
| Spiral..... | 1 90 |

| PIPE. | |
|---------------------------------------|-------|
| Conductor..... | |
| Plain Round and Round Corrugated..... | |
| 29 Gauge..... | 70&5% |
| 28 "..... | 70&5% |
| 26 "..... | 70&5% |
| 24 "..... | 70&5% |

| Square Corrugated A and B. | |
|----------------------------|-----|
| Octagon..... | |
| 29 Gauge..... | 65% |
| 28 "..... | 65% |
| 26 "..... | 65% |
| 24 "..... | 65% |

| Prices for Galvanized Toncan. | |
|--|--|
| Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application. | |

| Stove. | |
|------------------------------------|-------|
| 26 gauge, 5 inch E. C. nested..... | 15 40 |
| 26 gauge, 6 inch E. C. nested..... | 16 50 |
| 26 gauge, 7 inch E. C. nested..... | 18 70 |
| 28 gauge, 5 inch E. C. nested..... | 13 20 |
| 28 gauge, 6 inch E. C. nested..... | 14 30 |
| 28 gauge, 7 inch E. C. nested..... | 16 50 |
| 30 gauge, 5 inch E. C. nested..... | 11 00 |
| 30 gauge, 6 inch E. C. nested..... | 12 10 |
| 30 gauge, 7 inch E. C. nested..... | 14 30 |

| T-Joint Made up. | |
|------------------|---------------|
| 6-inch..... | per 100 38 50 |

| Furnace Pipe. | |
|------------------------------------|-----|
| Double Wall Pipe and Fittings..... | 40% |
| Single Wall Pipe, Round..... | |
| Pipe Fittings and Back Iron..... | 40% |
| Pipe, Shoes, etc..... | 40% |
| Milcor, galvanized..... | Net |

| PLANES. | |
|-------------------------|-----|
| Stanley Iron Bench..... | Net |

| PLIERS. | |
|------------------------|-------------|
| V. & B. No. 6..... | each \$0 52 |
| " No. 7 Gas..... | 0 55 |
| " Double Duty 100..... | 0 50 |
| " Nut No. 3..... | 0 60 |

| Lineman's Side Cutting. | |
|------------------------------|---------------------|
| Berg's (Swedish), In. 6..... | 7 8 |
| Blk. Pol. Face, doz..... | \$10 70 20 00 23 35 |

| Long Nose Side Cutting. | |
|-----------------------------|---------------|
| Berg's (Swedish) In. 6..... | 6 |
| Blk. Pol. Face, doz..... | \$12 25 15 20 |

| Flat and Round Nose. | |
|------------------------------------|---------------------|
| Berg's (Swedish) Flat, In. 4..... | 6 8 |
| Blk. Pol. Face, doz..... | \$5 90 13 35 19 65 |
| Berg's (Swedish) Round, In. 4..... | 6 8 |
| Blk. Pol. Face, doz..... | \$11 15 16 30 22 35 |

| POINTS, GLAZIERS. | |
|---------------------|--------------|
| No. 1, 2 and 3..... | per doz. 75c |

| POINTERS, SPOKE. | |
|---------------------|------------------|
| Stearns' No. 1..... | per doz. \$10 00 |
| No. 2..... | 13 00 |

| POKERS, STOVE. | |
|---------------------------------|-----------------|
| Wrt Steel, str't or bent..... | per doz. \$0 75 |
| Nickel Plated, coil hant's..... | 1 10 |

| PRESSES, FRUIT AND JELLY. | |
|----------------------------------|-----|
| Enterprise Manufacturing Co..... | 25% |

| PRUNERS. | |
|-----------------------|------------------|
| Disston's Pole..... | per doz. \$18 00 |
| Water's Improved..... | 60% |

| PULLEYS. | |
|-------------------|-----|
| Awning-Jap'd..... | 10% |
| Clothes Line..... | 10% |

| Hay Fork. | |
|-----------------------|---------------------|
| Iron Wheel, 5-in..... | per doz. \$2 50 |
| Wood Wheel, 5-in..... | 2 85 |
| Wood Wheel, 6-in..... | pass knot..... 3 00 |

| Sash. | |
|---------------------------|-----|
| Common..... | Net |
| Common-Sense, 2-in..... | Net |
| Empire Pattern, 2-in..... | Net |
| Ideal..... | Net |
| Steel..... | Net |

| PUMPS. | |
|--------------------|-----------------|
| Spray..... | |
| Midget Junior..... | per doz. \$3 75 |
| New Misty..... | 6 00 |
| Crescent..... | 6 50 |

| PUNCHES. | |
|-----------------|---------------------------|
| Conductors..... | |
| No. 22..... | per doz. \$3 00 |
| Machine..... | per lb. 25 |
| Saddlers'..... | |
| Common..... | per doz. \$1 50 to \$5 00 |

| Revolving Spring. | |
|----------------------|------------------|
| Stearns, No. 10..... | per doz. \$ 8 00 |
| " No. 40..... | 16 00 |
| " No. 60..... | 19 00 |

| Parker Metal Punch No. | |
|-----------------------------|-------------|
| OX..... | each \$7 00 |
| Whitney's Ball Bearing..... | |
| Prices on application | |

| PARERS. | |
|---------------------|------------------|
| Goodell's..... | per doz. \$10 80 |
| Turntable..... | 11 40 |
| White Mountain..... | 8 40 |
| Reading No. 78..... | 11 40 |

| PUTTY. | |
|-------------------------------------|--------|
| Commercial Putty, 100-lb. kits..... | \$4 75 |

| RAKES. | |
|--------------------------------|----------|
| Garden..... | Per doz. |
| Steel, Bow, 12-inch Teeth..... | \$3 50 |
| Steel, Bow, 14-inch..... | 3 25 |
| Malleable Iron, 12-in..... | 4 75 |
| Malleable Iron, 14-in..... | 5 00 |

| Hay. | |
|---------------------|--------|
| Wood, 10 Teeth..... | \$4 00 |

| Lawn. | |
|---------------|---------------|
| 30 Teeth..... | per doz. 5 50 |

| RAZORS—SAFETY. | |
|-------------------------------|------------------|
| Gillette..... | per doz. \$45 00 |
| Auto Strip..... | 45 00 |
| Gem..... | 8 40 |
| Gem (3 doz. lots)..... | 8 00 |
| Ever Ready..... | 8 40 |
| Ever Ready (3 doz. lots)..... | 8 00 |

| RAZORS—STRAIGHT. | |
|--------------------|-----|
| Star (Honing)..... | 50% |

| FLOOR REGISTERS AND BORDERS. | |
|-------------------------------------|-----|
| Cast Iron..... | 15% |
| Steel and Semi-Steel..... | 30% |
| Baseboard..... | 30% |
| Adjustable Ceiling Ventilators..... | 30% |

| Register Faces—Cast and Steel. | |
|---|-----|
| Japaned, Bronzed and Plated, 4x6 to 1414..... | 30% |
| Large Register Faces—Cast, 14x14 to 38x42..... | 50% |
| Large Register Faces—Steel, 14x14 to 38x42..... | 60% |

| RIDGE ROLL. | |
|-----------------|----------|
| Galvanized..... | |
| Crated..... | 70-25% |
| Wired..... | 70-25-5% |
| Milcor..... | Net |

| RINGS AND RINGERS. | |
|--|-----------------|
| Full..... | |
| Copper..... | 2 1/2-in. 3-in. |
| Per doz..... | \$3 40 32 65 |
| Rea's Improved Self-Piercing copper..... | |
|doz. | 3 40 |
| Steel, per doz..... | 1 50 1 80 |

| Fruit Jar. | |
|------------|------------|
| White..... | per lb. 80 |

| RIVETS. | |
|--------------------|--------------|
| Copper Belt..... | 50% Discount |
| Coppered Iron..... | 50% |
| Tinners'..... | 50% |

| Hame. | |
|--|-----------|
| Slotted Clinch per doz. | 60 @ 1 10 |
| Tubular..... | |
| No. 1 and 2 assorted sizes, 50 in box..... | doz. 75c |
| No. 1 and 2 assorted sizes, 10 in box..... | doz. 1 40 |

| ROPE. | |
|---|-----|
| Cotton..... | |
| 1/4, 5-16 in. Com. on reels, per lb..... | 30c |
| 1/4, 5-16 in. Com., in coils, per lb..... | 30c |

| Sisal. | |
|---|------------|
| 1st Quality, base 1 1/4c to 1 1/2c No. 3..... | 13c to 14c |

| Manila. | |
|----------------------------------|--------------------|
| 1st Quality standard brands..... | 17 1/4c to 18 1/4c |
| No. 2..... | 18c to 19 1/4c |
| Hardware Grade, per lb. | 12 1/2c |

| Pure Manila. | |
|--------------------------------|--------------------|
| 1st Quality, base, per lb..... | 17 1/4c to 18 1/4c |
| Hardware Grade, per lb. | 11 1/4c |

| SAWS. | |
|--------------------------|---------|
| Butchers'..... | |
| Atkins No. 2, 14-in..... | \$11 50 |
| " No. 2, 18-in..... | 13 00 |
| " No. 7, 16-in..... | 14 44 |
| " No. 2, 22-in..... | 14 48 |
| " No. 7, 20-in..... | 16 43 |
| " No. 7, 24-in..... | 18 28 |
| " No. 7, 28-in..... | 20 33 |

SETS.

| | | | |
|--------------------------|---|----|--|
| Nail. | | | |
| Square head.....per doz. | 1 | 84 | |
| Cup point, knurled | 1 | 78 | |
| Bivet. | | | |
| Farmers'..... | 0 | 19 | |
| Tinners' 3-4..... | 0 | 40 | |
| " 00-0..... | 0 | 60 | |

| | | | |
|----------------------------|-----|----|--|
| Saw. | | | |
| Atkins No. 10.....per doz. | \$3 | 50 | |
| " No. 12..... | 6 | 20 | |
| Diston's Monarch | | | |
| No. 2..... | 9 | 90 | |
| Diston's Monarch | | | |
| No. 12..... | 13 | 20 | |
| Leach's..... | 3 | 15 | |
| Nash's Hand..... | 4 | 20 | |
| Nash's X-Cut..... | 1 | 20 | |
| Stillman's Lever..... | 3 | 50 | |
| Stillman's X-Cut..... | 3 | 50 | |
| Whiting Pattern..... | | | |
| No. 31..... | 7 | 50 | |
| Eccentric Anvil..... | | | |
| Hand No. 295..... | | | |
| N. P. Norrill..... | | | |
| Pattern..... | 14 | 50 | |

SHEARS.

| | | |
|--------------------------|----------|----|
| Nickel Plated, Straight, | Per Doz. | |
| " " " " " " | \$12 | 80 |
| " " " " " " | 7 | 14 |
| " " " " " " | 8 | 16 |
| Japanned, Straight..... | 6 | 11 |
| " " " " " " | 7 | 12 |
| " " " " " " | 8 | 13 |

SHEAVES, SLIDING DOOR.

| | | | |
|-----------------|-----|----|---|
| Common. | | | |
| Inches..... | 3 | 4 | 5 |
| Per set..... | \$1 | 40 | 1 |
| Hatfield's..... | 1 | 75 | 2 |
| Per set \$1 80 | 3 | 10 | 2 |
| | 75 | 25 | |

SHINGLES.

| | | |
|----------------------|------------|----|
| Zinc (Illinois)..... | Per Square | |
| | \$15 | 00 |

SHOES.

| | | |
|----------------|-----|--|
| Conductor..... | 60% | |
|----------------|-----|--|

SHOVELS AND SPADES.

| | | | |
|------------|----|----|----|
| Coal. | | | |
| Hubbard's | | | |
| No. A..... | 15 | 10 | 14 |
| " B..... | 15 | 10 | 14 |
| " C..... | 15 | 10 | 14 |
| " D..... | 15 | 10 | 14 |
| " E..... | 15 | 10 | 14 |
| " F..... | 15 | 10 | 14 |
| " G..... | 15 | 10 | 14 |
| " H..... | 15 | 10 | 14 |
| " I..... | 15 | 10 | 14 |
| " J..... | 15 | 10 | 14 |
| " K..... | 15 | 10 | 14 |
| " L..... | 15 | 10 | 14 |
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| " V..... | 15 | 10 | 14 |
| " W..... | 15 | 10 | 14 |
| " X..... | 15 | 10 | 14 |
| " Y..... | 15 | 10 | 14 |
| " Z..... | 15 | 10 | 14 |

| | | | |
|-------------------------|----|----|----|
| Post Drains & Ditching. | | | |
| Hubbard's | | | |
| Size..... | A | B | C |
| 14"..... | 17 | 15 | 16 |
| 16"..... | 17 | 15 | 16 |
| 18"..... | 17 | 15 | 16 |
| 20"..... | 17 | 15 | 16 |
| 22"..... | 17 | 15 | 16 |

| | | | |
|-----------------------|-----|----|--|
| Alaska Steel. | | | |
| D-Handle.....per doz. | \$3 | 50 | |
| Long Handle..... | | | |
| | 3 | 00 | |

SKATES.

| | | | |
|--------------------------|-----|----|--|
| Roller. | | | |
| Ball Bearing—Boys'..... | \$1 | 50 | |
| Ball Bearing—Girls'..... | 1 | 60 | |

SNAPS, HARNESS.

| | | |
|------------------------------------|---------|--|
| Covered Spring..... | Add 30% | |
| Fudd's Pattern Add 32 1-6% to list | | |

SNATHS.

| | | | |
|-------------------------------|----|----|----|
| Double Ring Bush.....per doz. | \$ | 9 | 75 |
| Patent Loop, Bush..... | | 10 | 00 |
| Patent Loop, Grass..... | | 8 | 75 |

SNIPS, TINNERS'.

| | | |
|------------------|-----|-----|
| Clover Leaf..... | 40 | 10% |
| National..... | 40 | 10% |
| Star..... | 50 | |
| Milcor..... | 50 | |
| | Net | |

SPRINGS, DOOR.

| | | | |
|----------------------------------|---|----|---|
| Perfect. | | | |
| No..... | 2 | 3 | 4 |
| Per doz. 45c 50c 55c 65c 80c 90c | | | |
| Reliance. | | | |
| Light Medium Heavy | | | |
| Per doz. \$1 80 2 40 3 75 | | | |
| Torrey's.....per doz. | 1 | 65 | |

SPRINKLERS, LAWN.

| | | | |
|----------------------------|------|----|--|
| Stearns No. 1.....per doz. | \$11 | 50 | |
|----------------------------|------|----|--|

SQUARES.

| | | | |
|---------------------------------------|-----|----|--|
| Steel and Iron.....Net | | | |
| (Add for bluing, \$3.00 per doz. net) | | | |
| Mitre..... | | | |
| Try..... | | | |
| Try and Beyel..... | | | |
| Try and Miter..... | | | |
| Pox's.....per doz. | \$8 | 00 | |
| Winterbottom's..... | 10 | | |

STAPLES.

| | | | |
|-----------------------------|-----|----|----|
| Blind. | | | |
| Barbed.....per lb. | \$1 | 20 | 20 |
| Butter, Tub..... | 16 | 10 | 00 |
| Fence..... | | | |
| Polished.....per 100 lbs. | \$5 | 45 | |
| Galvanized..... | 6 | 15 | |
| Netting. | | | |
| Galvanized.....per 100 lbs. | \$4 | 54 | |
| Wrought. | | | |
| Wrought Staples, Hasps and | | | |
| Staples, Hasps, Hooks and | | | |
| Staples, and Hooks and | | | |
| Staples.....50&10% | | | |
| Extra heavy..... | 35 | | |

STONES.

| | | | |
|-----------------------|-----|------|--|
| Aze. | | | |
| Hindustan.....per lb. | New | Nets | |
| More Grit..... | | | |
| Washita..... | | | |

Emery.

| | | | |
|----------------------|-----|------|--|
| No. 128.....per doz. | New | Nets | |
|----------------------|-----|------|--|

Oil—Mounted.

| | | | |
|----------------------|-----|------|--|
| Arkansas Hard | | | |
| No. 7.....per doz. | New | Nets | |
| Arkansas Soft | | | |
| Washita No. 717..... | | | |

Oil—Unmounted.

| | | | |
|-----------------------|-----|------|--|
| Arkansas Hard per lb. | New | Nets | |
| Arkansas Soft | | | |
| Lily White..... | | | |
| Queer Creek..... | | | |
| Washita..... | | | |

Scythe.

| | | | |
|------------------------|-----|------|--|
| Black Diamond per gro. | New | Nets | |
| Crecent..... | | | |
| Green Mountain..... | | | |
| LaMolle..... | | | |
| Extra Quinse- | | | |
| bog..... | | | |
| Red End..... | | | |

STOPS, BENCH.

| | | | |
|---------------------------|------|----|--|
| No. 10 Morrill pat- | | | |
| tern.....per doz. | \$11 | 00 | |
| No. 11 Stearns pat- | | | |
| tern..... | 10 | 00 | |
| No. 15 Smith pattern..... | 7 | 00 | |

STOPPERS, FLUE.

| | | |
|-----------------------|-----|----|
| Common.....per doz. | \$1 | 10 |
| Gem, flat, No. 3..... | 1 | 00 |
| Gem, No. 1..... | 1 | 10 |

STRETCHERS.

| | | | |
|------------------------|-----|----|--|
| Carpet. | | | |
| Bullard's.....per doz. | \$3 | 90 | |
| Excelsior..... | 5 | 25 | |
| Malleable Iron..... | 7 | 00 | |
| Perfection..... | 8 | 30 | |
| King..... | 4 | 50 | |

| | | | |
|------------------------------|------|--|--|
| Wire. | | | |
| O. S. Elwood, No. 1 per doz. | Nets | | |
| O. S. Elwood, No. 2..... | | | |

SWIVELS.

| | | |
|----------------------------|-----|----|
| Malleable Iron.....per lb. | \$0 | 10 |
| Wrought Steel.....per gro. | 4 | 50 |

TACKS.

| | | | |
|-----------------------------------|----------|--|--|
| Bill Posters' 6-oz., 25-lb. boxes | | | |
| per lb..... | 15c | | |
| Upholsterers' 6-oz., 25-lb. | | | |
| boxes, per lb..... | 15 1/2 c | | |

TAPES, MEASURING.

| | | |
|------------------|----------|--|
| Asses' Skin..... | List&40% | |
|------------------|----------|--|

THERMOMETERS.

| | | |
|-----------------------|-----|----|
| Tin Case.....per doz. | \$0 | 25 |
| Wood Back..... | \$2 | 00 |
| Glass..... | 12 | 08 |

TIES.

| | | | |
|------------------------|----|-----|--|
| Bale. | | | |
| Single Loop, carload | | | |
| lots..... | 75 | 7% | |
| Single Loop, less than | | | |
| car lots..... | 70 | 15% | |

TRAPS.

| | | | |
|---------------------------|-----|----|--|
| Game with Chains. | | | |
| Victor No. 1.....per doz. | \$1 | 32 | |
| Oneida Jump No. 1..... | 2 | 20 | |
| Newhouse No. 1..... | 4 | 33 | |

| | | | |
|-----------------------------|----|----|--|
| Mouse and Rat. | | | |
| List per gross. | | | |
| Sure Catch Mouse Traps..... | 3 | 70 | |
| Vim Mouse Traps..... | 3 | 70 | |
| Short Stop Mouse Traps..... | 3 | 20 | |
| Wood Choker Mouse | | | |
| Traps, 4 hole..... | 17 | 00 | |
| Sure Catch Rat Traps..... | 15 | 00 | |
| Vim Rat Traps..... | 15 | 00 | |
| Short Stop Rat Traps..... | 15 | 00 | |
| Dead Easy Rat Traps..... | 17 | 00 | |
| Star Rat Traps..... | 50 | 00 | |
| Erle..... | 54 | 00 | |

| | | | |
|---------------------------------|----|----|----|
| Packed in One Bushel Band Stave | | | |
| Baskets. | | | |
| List per bushel. | | | |
| Sure Catch Mouse Traps | | | |
| (360 Traps)..... | \$ | 9 | 30 |
| Short Stop Mouse Traps | | | |
| (360 Traps)..... | 8 | 00 | |
| Sure Catch Rat Traps (54 | | | |
| Traps)..... | 8 | 00 | |
| Short Stop Rat Traps (54 | | | |
| Traps)..... | 5 | 60 | |

| | | | |
|-------------------------------|-----|----|--|
| Assorted Mouse and Rat Traps. | | | |
| List per bushel. | | | |
| Sure Catch (216 Mouse | | | |
| Traps and 26 Rat Traps)..... | \$3 | 50 | |
| Short Stop (216 Mouse | | | |
| Traps and 26 Rat Traps)..... | 7 | 50 | |

TROWELS.

| | | | |
|-------------------|----|----|--|
| Cement. | | | |
| Atkins No. 6..... | 19 | 50 | |
| No. 9..... | 25 | 50 | |
| Diston's..... | 30 | | |

TUBS, WASH.

| | | | |
|-----------------------------------|---|---|-------|
| Standard, Wood. | | | |
| No..... | 3 | 1 | large |
| Per doz. \$9 50 11 25 12 75 15 50 | | | |
| Galvanized. | | | |
| No..... | 1 | 2 | 3 |
| Per doz.13 75 15 95 18 40 | | | |

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